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## THE DIFFERENTIAL DIAGNOSIS OF CARDIAC ARRHYTHMIA WITHOUT THE USE OF THE ELECTRO-CARDIOGRAPH.

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Due to the study and investigations of Lewis, McKenzie, Flack, Keith, His and Twarh, we are able to differentiate the jumbled-up heart irregularities, known as Cardiac Arrythmias without having to use the Electrocardiograph, which, I think, is impracticable for the general practitioner and surgeon.

It is necessary for us to know something of the mechanism of the normal beat, so that we may understand the abnormal better. The stimulus which causes the heart to contract in normal rythm arises in the sino-auricular node, situated in the right auricle, just below the superior vena-cava. The impulse is conducted from the auricle to the ventricle through the auricular ventricular bundle (known as His' bundle). This bundle divides into a right and left branch. It spreads out into a network which is distributed to the papillary muscles and walls of the ventricles. Normal contractions are due to the fact that this organ possesses the functions: 1st,—Stimulous production, 2nd—Excitability, 3rd—Conductivity, 4th—Contracility, 5th—Tonicity. These functions seem to be co-ordinated due to the cardiac nerves which apparently have both a direct and indirect modifying and controlling function.

If any portion of the foregoing mechanism fails in its proper co-ordinated function, either from the standpoint of time, place, or intensity, arrhythmia will occur. I will try to describe to you seven kinds of heart irregularities, which, I think, will cover the field, all of which can be diagnosed without the use of the electro-cardiograph, with the possible exception of Heart Flutter. They are: 1st, Sinus Arrhythmia; 2nd, Extra Systole; 3rd, Auricular Fibrillation; 4th Paroxysmal Tachycardia; 5th, Heart Flutter; 6th, Pulsus Alternans; 7th, Heart Block.

SINUS ARRHYTHMIA, described frequently as juvenile arrhythmia, because of its frequency in the young. It comes from a nervous condition, an affection of the tenth nerve, as a rule. Under normal conditions, a deep inspiration tends to accelerate a deep expiration to retard the pulse. In sinus arrhythmia, you get this condition with a normal inspiration and expiration. Sinus arrhythmia may also occur independently of the respiratory act. It is characteristic for it to occur during convalescence from infections. The heart sounds are not altered in this condition and it may be diagnosed as a rule by having the patient hold its breath and the irregularity will disappear. Atropine will also abate it.

EXTRA SYSTOLES, or premature contractions, are produced by extra stimuli in the auricle, the bundle of His, or the ventricle, normal stimuli originating at the sino-auricular node and transmitted through the bundle at spaced intervals, are interfered with and we have premature contractions which gives us a dropped beat. This premature contraction usually comes early in Diastole and is weak, not always perceptible at the wrist. The beat of the premature contraction and the beat following it occupy the time of two normal beats. The premature contraction is weak and early and the beat following is strong and the time between the two is longer, so much so, that the patient may notice it and become alarmed when in reality, he need not be, for it is not of a serious nature, unless he has a myocardial weakness causing it. Extra systoles usually occur with a slow pulse. When the rate is increased, they disappear and may be differentiated from auricular fibrillations by having the patient exercise. When the rate is increased the premature contractions cease while with auricular fibrillations, the irregularity increases.

AURICULAR FIBRILLATIONS, characterized by a regular irregularity of the heart beat both as to time and rhythm, due, as a rule, to serious organic lesions of the heart muscles. The auricles are exhausted and these contractions being fast and irregular, they come through the auricular ven-

tricular bundle in such a weak and irregular way that the contractions of the ventricles are a jumbled up, constant, irregular contraction of which quite a few fail to come through to the wrist and this condition is known as the pulse deficit. This condition may be best demonstrated by having an assistant count the radial pulse at the wrist, while you count the apex beat with a stethoscope for one minute, both of you using the same watch, the difference will be the pulse deficit and when it amounts to as much as 40 beats per minute, the prognosis is grave.

PAROXYSMAL TACHYCARDIA — Its chief characteristic is that it begins and ends suddenly. The rate is 150 to 280 per minute. Its cause may be neuroginic or myoginic. Exercise, posture, or atropine, have no effect on it. Pressure on the right vagus nerve will stop about 50 per cent of the attacks.

AURICULAR FLUTTER—This is a condition in which abnormal focus within the auricle gives rise to rapid, regular contractions, varying in rate from 200 to 400 per minute. This stimuli is usually conducted to the ventricles 1 to 2, 1 to 3, or 1 to 4 ratio. The ventricular rate is usually one-half the auricular rate. The rate is wonderfully constant and is uninfluenced by position, exercise, or vagal stimulation. In an elderly person with a ventricular rate of over 120 that does not change with exercise or position, you may with safety make a diagnosis of Flutter.

PULSUS ALTERNANS—This is a condition in which every other pulse wave varies in height, with a normal pulse rate and a large and small beat. You may know that you have a myocardial condition to deal with that is grave. If you are suspicious that you have a pulsus alternans, you can demonstrate the fact by applying a blood pressure apparatus. The cuff is inflated until the pulse is halved. As you lower the pressure you will finally get the weak beat and the pulse will then be doubled in number or back to normal.

HEART BLOCK is a term used to describe the blocking of the impulse of contraction somewhere between its origin at the sinus auricular note or its termination in the fibers of purkinje in the ventricles. The blocking may be complete and when it is, the ventricles originate their own contractions and are about 30 per minute. It is, however, usually a partial block and comes through 2 to 1, 3 to 1, or 4 to 1 contractions of the auricles to one of the ventricles. You should think of block when the pulse are less than 50 per minute. If you have it, an examination of the jugulars will show 2 or 3 waves to the carotid's one. Digitalis improperly given often causes block. The rate is usually halved when digitalis is the cause of it. Complete block is usually due to an organic disease of the Bundle of His, Syphilis being the most frequent cause of it.

## SUMMARY.

In making the diagnosis of the different arrhythmias without the assistance of the Electrocardiograph, I would suggest that in a young person with irregularity look for sinus arrhythmia. The pulse will be increased on inspiration and slowed on expiration. The irregularity will disappear if you have patient hold his or her breath and may be differentiated in that way. Extra systoled or premature contractions, is usually found in people past middle age and when they are at rest, the premature contraction and the one following it occupy the time of two normal contractions, therefore the beat following the premature contraction is larger and longer, so much so, that it is noticeable to the patient. Premature contractions may be differentiated from other irregularities by having the patient exercise as they always disappear when the rate reaches 120.

Auricular fibrillations may be known by their absolute irregularity of rate, rythm, and volume. There is a difference of the apex beat and of the pulse at the wrist. This is known as pulse deficit. The irregularity increases with exercise. Auricular flutter is the most difficult arrhythmia to diagnose without the use of the electrocardiograph. It may be suspected when a pulse of 180 is suddenly halved. The rate, as a rule, is regular and not influenced by position, exercise, or stimulation. I think it is well to suspect auricular flutter in any aged person with a ventricular pulse of over 120 that is constant.

Paroxysmal tachycardia is a rapid heart action usually of over 180 beats to the minute that comes on suddenly and ends suddenly without the patient having given any history or symptoms of a heart condition. It is differentiated by its sudden beginning and ending. Position and exercise has no effect on it, but pressure on the right vagus nerve may stop the attack.

Pulsus Alternans may be diagnosed when every other beat is weak and small. It must be every other beat. This condition can best be found out by pressure over

the brachial artery where the small and weak beat may be eliminated and the pulse is then halved. When it is suspected, if you will take the patient's blood pressure you will get a beautiful demonstration of eliminating the weak contraction and I have seen a difference of 50 mgs. of mercury between the strong and the weak. Heart block is suspected when the pulse is less than 50 per minute. Compare pulse waves in jugular with carotid, the jugular wave will be 3 or 4 times more. Rate will not increase with exercise.

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*Opening Discussion:* LEA A. RIELY, Oklahoma City.

The anatomist tracing out the enervation of the heart and the physiologist coming along and testing out the functions of these nerves, vivisection on the lower animals has all given us an idea upon which our present conceptions of cardiac arrythmia are based.

These movements of the heart are graphically traced by the Electrocardiograph and polygraph under various conditions and thereby our knowledge is also enhanced. McKenzie, however, is the pioneer in these studies and he laid the foundation of his knowledge as a general practitioner while in attendance on obstetrical cases, so those who have not access to these instruments of precision do not need to think they are seriously handicapped. These same instruments if too much relied upon do not produce the great clinicians which we formerly had.

While the functions of the heart muscle allow it to perform its movements independently, nevertheless nervous influence has a great power in affecting the action of the various fibres.

The fact that the heart muscle begins normally at the sinus but it may begin at any point in the heart which is more excitable than its usual point giving rise to various forms of cardiac irregularity.

Mere cardiac irregularity does not bespeak a bad prognosis. Other characteristics of the heart are more important, *i. e.*, the response to effort or exercise and ability to go back to normal on repose.

In young patients recovering from an acute infection, there is no danger in mere irregularity, in fact, McKenzie says it is an evidence that the heart has come through unhurt.

Sinus arrythmia frequently comes on in the young after fevers during slow respiration, apex beat and radical pulse correspond. When there is a definite and stated relation to respiration, no further evidence is required, but deep breathing always helps to bring it out.

When the function of tissues uniting auricle and ventricle is impaired, a disturbance of the sequential action is brough about. In complete heart block, two separate rhythms are maintained. One starts in and contracts the auricle, the other originates in and contracts the ventricle.

Digitalis often brings out dormant heart block in rheumatic cases. The added effect of the digitalis may be due to its effect on the vagus nerve as it can be removed by atropine.

Extra systoles or premature contractions where auricle or ventricle responds to a stimulus from an abnormal point of the heart but where the fundamental rythm is maintained.

Extra systoles may be noticed throughout life even to a good old age.

Pulsus alternans as its name implies, means a halving of the beats when the cuff of sphygmomanometer is let down to a certain point. It indicates a very badly crippled heart and a demise within a year.

Auricular fibrillation where you find your pulse deficit your irregular irregularity as contrasted with the regular irregularity in the above conditions it is especially associated with mitral stenosis.

McKenzie says 90% of heart deaths die in fibrillation. Many get up and around after doses of digitalis to be floored again when some unusual stress, mental or physical, comes upon them.

Paroxysmal tachycardiaes a most interesting clinical observation coming on and off with abruptness as if some piece of machinery were set in motion.

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*Discussion:* DR. J. A. RODDY, Oklahoma City.

I wish to reiterate the compliments tendered Dr. Lackey and concur with much of what he has said, at the same time, I invite your attention to the fact that only half the truth of the matter has been presented. It is conceded that in many cases it is possible to identify the particular type of arrhythmia one is dealing with; it is equally true that in many other cases identification of the type of arrythmia is important and can only be accomplished by use of the electrocardiograph. Since January 1st of this year I have examined more than 100 cardiac cases, both physically and with the electrocardiograph and have, a number of times, detected and identified

arrhythmias with the electrocardiograph, when I could not do so otherwise, and I know that in these particular cases no one else could have done differently. I regret that you gentlemen were not at my clinic Tuesday. I had the cases referred to there for the purpose of demonstrating this fact. These patients are still in the city and I shall be glad to have anyone who wishes, examine them.

Sir James Mackenzie (1), previously referred to in this discussion, believes the ideal state would be that in which he could regularly and accurately make a diagnosis from a consideration of the patient's symptoms alone; we all agree with that; likewise, as he does, we too know it is impossible. The important part of Mackenzie's teaching is that most of the signs and symptoms of heart disease with which we are familiar are the signs and symptoms of its *late* stages, and what we have not, but must develop, is a knowledge of the *early* signs and symptoms.

From my own work I know one gains a more complete and accurate knowledge of the heart's condition, in any case by using the electrocardiograph, than is possible without it and that the electrocardiograph frequently yields important information that is not otherwise procurable. For these reasons it seems obvious that to learn most about the subject and to be best able to arrive at a correct diagnosis when cardiography is not available, that we should have all our cardiac patients examined with the electrocardiograph when possible. Of more weight than any words of mine, are those of J. Strickland-Goodall (2), based on a study of 13,231 cases during a period of ten years. He says: "It is probably correct to say that there are few manifestations of cardiac disorder so obvious to both the patient and the doctor as the condition spoken of as the premature contraction or extrasystole." (Let me add that not infrequently the condition exists without the patient being conscious of it.)

"Different diagnosis of the different types is often of the greatest importance, and although various suggestions have been made to enable one to do so, it seems to me that the only reliable method is the electrocardiographic."

(1) Mackenzie, James: The Position of Medicine at the Beginning of the Twentieth Century Illustrated by the State of Cardiology; N. Y. Med. Jour., Vol. CXV, No. 2, Jan. 18, 1922.

(2) Strickland-Goodall, J.: The Premature Contraction and Its Significance; N. Y Med. Jour., Vol. CXV, No. 4, Feb. 15, 1922

## MITRAL STENOSIS.

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With the human body, as with each living organism, in order that each function be at its best, it is necessary that the assimilation of foods and the removal of effete matter be continuous. It is imperative that a continuous supply of assimilable nourishment be provided and a removal of metabolic products be taken care of continuously. Both of these functions are performed by the blood. To do this, however, it must be supplied in a never-ceasing stream, in and out of the tissues, and in a volume varying with the activity of the various organs and tissues at different times; and maintained under a given pressure and at a certain velocity.

The system utilized by the human economy for this purpose is termed the circulatory system, this consists of a central or dominating organ called the heart, which has as its agents a series of diverging and ramifying tubes, called the arteries, which convey the blood to the capillaries, a network of very fine, thin, osmotic passageways, which serve to deliver nourishment to the tissues and remove debris, also they connect the arteries with the veins, a network of converging tubes emptying the blood back into the heart.

The heart is anatomically and physiologically divided into two sides, right and left, and each side into two distinct chambers, right auricle and right ventricle, and left auricle and left ventricle. There are four valves in the heart so situated and functioning in health as to offer complete resistance to the back flow of blood when the heart functions, and to hold the blood at a given pressure, called the pulse pressure, when the heart is quiescent.

When this works as planned by the Architect of the Universe, there is complete harmony, circulatorially speaking.

Tuohy (1), says: "The earlier signs of cardiac disease are hidden, because, paradoxically, it begins as something else. The classical signs of mitral stenosis cannot occur until scaring more or less dense has had time to develop."

Each of us has been brought suddenly face to face with a well developed presystolic thrill and murmur in a patient that we had previously treated for some throat, tonsillar or some rheumatic condition and had flattered ourselves that we had been in-

ternists enough to pilot our patient past this dangerous reef. Possibly the complaint had been of too trivial import to merit more than a passing interest to our then busy minds.

The mitral valve is a two-cusp valve (sometimes called the biscuspid valve), situated between the left auricle and left ventricle and is subjected to greater pressure and harder usage than either of the other valves of the heart. And as a rule of mechanics informs us, "The more vigorous the force and uneven the pressure the greater the wear of the parts, other things being equal." Knowing this to be true we would expect the mitral valve to be the most frequently damaged valve of the heart, and this is a fact.

Our paper today will deal with mitral stenosis, the most frequent basis for auricular fibrillation, and by far the most important, as well as the most persistently progressive single lesion of the heart.

The "Mitral Facies" has for some time been recognized as an entity, that, with a stunted, dwarfed development, and an ambition out of all proportion to their physique, presents the characteristic early development resulting from the mitral stenotic lesion.

This lesion is most prevalent in young girls, explained by its following the infections, 75% are due to rheumatism as evidenced by growing pains, and is practically always a double lesion. Chorea, tonsilitis, scarlatina, diphtheria and the septicemias. The predominence of lesions in girls being due, no doubt, to girls being treated as hothouse plants, and being frequently overheated and over-clothed (especially in their young days), lack of exercise and improper diet leaves them in a weakened condition and an easy prey to the infections.

Osler (2) divided mitral stenosis into *Functional* or *Spasmodic* mitral stenosis and *Organic* mitral stenosis.

*Functional* or *Spasmodic* mitral stenosis may be due to a spasm of the sphincter muscle of the mitral orifice or of the papillary muscles. This occurs frequently in hysterical, aneamic, and cholorotic subjects.

The *Organic* due to anatomical changes produced by inflammatory infiltration, or contractures due to cicitritial changes. This is practically always due to endocarditis.

*Post Mortem*, there are two anatomical forms:

*The Button Hole Mitral*
and
*The Funnel Form Mitral.*

The button hole mitral presents cusps that are thickened, shortened, and adherent. Often on account of the progressive inflammatory deposits there forms a solid mass around the slit-like opening. This form of lesion gives a blowing murmur—crescendo in type, high-pitched becoming low, then back to high pitch again—due to the intra-auricular pressure forcing the blood through the slit-like opening; the pressure becoming less as the volume of blood dammed back becomes less; then increasing as the muscular walls of the auricle try to force as much blood as possible through before the ventricular systole. This murmur is accompanied by a diastolic pre-systolic thrill that is almost pathognomonic and is usually present before the murmur is discernible and remains after the murmur disappears with broken compensation. However, we may anticipate the liveliest thrills when the auricle is functioning and the murmur is present.

This murmur and thrill occurs with or directly following the second sound of the heart, diminishing in intensity, then increasing to very intense up to the first sound of the heart; which seems to terminate it very abruptly in a sharp, slamming-like sound. This murmur when heard is absolutely a compensated murmur, and may completely disappear in broken compensation. When you detect its weakening and disappearance be on your guard as this is your danger signal and means that the end approaches.

The soft, diastolic murmur points more conclusively to early disaster than the sharp, grating, snappy sounds that indicates good muscular tone and valves with some degree of function.

The second post-mortem form is the *Funnel Form Mitral.* This results from a less violent form of destructive inflammation and shows adhesions of valve borders only, the tips of the cusps remaining free and unaffected. This gives the valve a peculiar shaped opening, and produces a presystolic blubbering murmur, due to the flaps vibrating against the regurgitating current of blood.

There are two clinical forms of mitral stenosis.

*Those With Slow Pulses and Fair Regularity*, and
*Those With Auricular Fibrillation, Flutter or Arrythmia.*

The first class or those with fair regularity, and a slow pulse, represent the best class of mitral stenotic risks and includes those cases of compensating hearts.

In this case the pulse is usually very slow as the systole is delayed to allow the left ventricle to fill, as nearly as possible, before discharging its load into the arteries; thus maintaining a fair blood pressure. As a rule the pulse is small in volume, due to a vaso-constriction. Thus the physiology of the system to overcome the effects of an insufficient systemic blood supply. This class of cases is usually discovered by chance as they rarely produce symptoms until late. About one-third of them come complaining of some gastro-intestinal lesion—resulting from congestion of liver, stomach, spleen and small bowel. Hemoptysis is present in about ten per cent; due to a congestive state of the lungs. Later when the crescendo murmur fails or is replaced by a low-pitched murmur, the irregular pulse appears and the evidence of auricular contraction disappears, producing what McKenzie has been pleased to call the *Disorderly Pulse of Mitral Stenosis*, because it has no orderly sequence. However, irregularity of the heart is very frequently present even in the early stages of mitral stenosis. The heart remaining regular while the patient is at rest and becoming markedly irregular upon a small amount of exercise. As a rule these patients suffer with cold extremities and rest very much better when the head is supported at night by two or more pillows.

This is the lesion causing sudden death from heart failure and here the mortality statistics begin to loom large during the child-bearing period, as over seventy-five per cent of the mitral stenotic lesions are in women; and a large per cent of these women are tubercular. Mitral stenosis is especially dangerous to women in that period of high blood pressure following the climacteric. Accidents in mitral stenosis are very common. As frequently public speakers, suffering from this lesion, when finishing an after-dinner address, die very suddenly. Also, these sufferers are very prone to acute congestion of the lungs, acute infarcts with hemoptysis, and sudden death in an acute cardiac failure. Embolism is frequent from a clot in the left auricle, or from detached vegetation from the mitral orifice. Plugging of the right sylvian artery with resulting aphasia and hemiplegia. Also, there occurs embolism of peripheral arteries and rarely a widespread thrombosis.

*Those with Auricular Fibrillation: This* is decomposition in some stage. The flutter of fibrillation may be almost positively diagnosed by the absence of the normal pre-systolic wave and the presence of a direct systolic jugular pulsation. Auricular fibrillation, according to Green (3) may safely be assumed when the pulse is irregular and above one hundred and twenty. If irregular and below one hundred and twenty, heart block is to be seriously considered. In his clinic forty per cent of all arrythmias are due to auricular fibrillation, and fifty per cent are associated with mitral stenosis. This state of fibrillation may persist for years; the auricle acting as a reservoir and the right ventricle supplying, by means of pressure through the pulmonic circulation, the force necessary to deliver the blood to the left ventricle through the slit-like opening in the stenosed mitral.

The mitral stenotic murmur requires quite a careful technic for its detection, as the bell of the stethoscope should touch the chest wall just barely enough to make an even contact; for a forcible application of the stetoscope will render a typical murmur atypical or wholly obliterate it. The neglect of this precaution is the cause of this murmur being the most frequently undetected murmur of the abnormal heart. When properly listened for, the mitral stenotic is the most easily recognized of the heart murmurs. Even when compensation is far gone and there are no murmurs, the snapping first sound will guide you in your diagnoses.

The murmur from mitral stenosis is the most inconstant of all murmurs. It is more easily heard when the patient is standing and after exercise. When leaning forward and to the left a short, low-pitched rumble or roll immediately precedes the systole, increasing in intensity as it approaches the first sound. This and the snapping, shock-like, first sound are usually confined to an area not greater than the size of a silver half-dollar, and immediately over the apex. Another characteristic is that the diastolic sound is prolonged so that the interval between the second sound of the one cycle and the first sound of the next is unduly prolonged. Frequently the second sound is reduplicated (double-shock sound of some authors). Sanson states that the double shock sound may precede all other evidences of this lesion.

The loud, sharp, slamming quality of the first heart tone as heard over and near the apex is peculiarly characteristic, and,

as a rule, maintains its peculiar quality even when the auricles are in fibrillation. The first sound is extraordinarily forcible and is usually transmitted to the back where it can be heard inside the left scapula at its lower angle. In impeding dilation all murmurs become weak, and on dilation, incompetence or regurgitation of the tricuspid valve the presystolic murmur disappears entirely.

Ausculatation over the pulmonic area, in the second interspace two inches to the left of the sternum, gives a decidedly accentuated second sound as long as there is compensation. As compensation fails this sound becomes less distinct. In this area there is frequently a reduplication of the second sound.

In uncomplicated lesions there is no discernible murmur in the aortic area.

There is rarely a galop rythm, protodiastolic occurring in relative insufficiency. This is not pathogonomonic as it occurs in some normal hearts when the patient is laying on his left side and is very common in slow hearts.

Occasionally the mitral stenotic murmur is heard fairly plain over the epigastrium. This is due to hypertrophy or dilation of the right ventricle, and is a sign of a severe lesion or a weak resistance or both.

*Inspection* may reveal a normal apex or an apex displaced one or two inches to the left, crowded over by the hypertrophied right ventricle. There may be marked, para-sternal pulsations and pulsations of the lower segment of the sternum. In children, especially, the praecordia may bulge and pulsate from the second to the sixth rib along the left border of the sternum.

*In Palpation* we have a valuable aid, as the diagnosis may frequently be suspected from palpation alone; especially when the lesion is well compensated. There is a purring thrill transmitted to the hand, not unlike that felt when holding a purring cat; and when it is once felt cannot be mistaken for anything else. The area of thrill covers the location of the apex beat and rarely reaches above the fourth rib, usually felt better on expiration and after exertion. Diastolic in time, rising crescendo-like and terminating in the sudden shock of the first sound of the heart.

*Percussion* may not divulge any change until the left auricle has dilated considerably, and cases are on record where the left auricle had a capacity of as much as two quarts. The changes in cardiac outline are usually to the right, the right ventricle has to furnish the left auricle with the propelling power to overcome the stenosed valve, as the blood vessels in the lungs have practically no expansile power they lend themselves admirably to this compensatory function, this causes a hypertrophy and dilation of the right ventricle which frequently progresses to a permanent injury to both valves in the right side of the heart. This merges into a complete decompensation with its multitude of symptoms. The dilated left auricle is almost wholly posterior and yields almost no demonstrable physical signs and usually may be detected only by means of the x-ray.

The *x-ray* shows a characteristic prominent shadow of the left auricle on the upper left border of the heart between the shadow of the ventricles and of the pulmonary artery.

*The Blood Pressure* in pure mitral stenosis is likely to be low, but as a pure mitral stenosis is rare and regurgitation and vasoconstriction equalize the pressure it rarely shows abnormal. Some cases show a slightly raised blood pressure. When irregularity sets in the blood pressure may show wide variations, from one hundred to one hundred and sixty or more systolic.

*The Subjective Symptoms* are usually slow of development in the adult. Slight shortness of breath on exertion may be the only symptom for years, even in very severe stenosis. In others, there will be a very noticeable irregularity of the heart's action with shortness of breath.

One of the early subjective symptoms that has been brought very forcibly to my attention is that most of these patients taste blood on any extraordinary exertion, excitement or excess, and that without any ocular blood.

They complain of dyspnea progressing to cough, bronchitis, slightly blood streaked sputum. Cyanosis is noticeable.

Sometimes the so-called cardiac asthma will be the presenting symptom. This is usually accompanied by shortness of breath.

When a bronchitis sets up with these patients, the mucous membrane in the lungs being congested and hyperemic,—it takes very little inflammatory swelling to close the small bronchi, thus causing these patients to suffer from severe air hunger. Hence their constant cough, blood streaked sputum and congestion of lungs with various rales.

With the beginning of decompensation they have venous congestion, as evidenced by blueness of face, lips, nails, and surface of body. Often they have nose bleed, spitting of blood, and usually insomnia. When seen at this stage for the first time it is often diagnosed as tuberculosis. I urge that you use care, for at this stage rational treatment may add several years of comparatively normal living. Frequently there is an increased secretion of mucous in the bronchial tubes and throat which is often very troublesome and the cause of considerable coughing.

There are changes in the apex of the left lung together with hoarseness due to a congestive condition from the enlargement of the left auricle. This resulting in a mechanical pressure stasis which gives a foreign percussion and osculation sound. This dilatation of the left auricle results in a back pressure in the whole lung with ultimate strain of the right heart. More than two-thirds of these cases will come complaining of cough and dyspnea. At this stage even, there may be only faint and inconstant signs after the most careful examination. Listening intently at the rear base of the lungs in a sitting position after the patient has been laying down for some time, there will frequently be heard crackling rales which are very valuable from a diagnostic standpoint. Chest pain is a valuable sign due to overcrowding of the heart, causing acute distress.

An occasional symptom is paralysis of the left recurrent laryngeal nerve due to a pressure neuritis rather than to an actual destruction of the nerve. According to Garland and White (4) the laryngeal nerve is squeezed between the left pulmonary artery and the aorta or aortic ligament causing this symptom. Any continuous hoarseness or huskiness of the voice of doubtful or obscure origin should elicit a very careful and painstaking search for a mitral stenotic lesion. And this in connection with a wide area of impulse in the second, third and fourth left interspaces may lead to a diagnosis of aortic aneurism.

*Sphygmograph Tracings* show short upstrokes and long wave which slowly disappears. Irregularity is the rule. According to the older authorities there are four cardinal diagnostic signs:

1st. The localization of the murmur.
2nd. The time diastolic.
3rd. The purring, vibrating thrill.
4th. The abrupt termination in the first sound of the heart.

But McKenzie says that "Where there is adequate compensation a crescendo presystolic murmur, and in auricular fibrillation, a diminuendo apical murmur, diastolic in time means mitral stenosis."

There are two conditions that you will need to keep in mind when making your differential diagnosis:

Pericardial adhesions which give a diastolic rumbling apical murmur but not so peculiarly localized, nor has it the abrupt ending in the slamming, snappy, first sound.

*From Tuberculosis* by absence of the tubercle bacilla, and showers of fine crepitant rales, as well as other classical signs of tuberculosis. Bibliography.

1. Tuohy—The Journal Lancet.
2. Osler's Modern Medicine, Lea Bros. and Febiger.
3. Green's Medical Diagnosis, Lippincott Co.
4. Garland and White, Archives Internal Med., Sept., 1920.

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*Discussion:* J. A. RODDY, M. D., Oklahoma City.

There are several aspects of this excellent paper I would like to comment on. Relative to the facies in this disease let me quote Russell-Wells: "The lips and mucous membranes are cherry red or purplish, cheeks bluish pink, there are slightly dilated venules on the face, and elsewhere, the eyes are watery, not infrequently pinkish." As to fibrillation, I wish to state that fibrillation is not confined to the stage of decompensation, if by that expression is meant the state in which one is incapacitated for work or confined to bed. Fibrillation, in mitral senosis, as in other cardiac diseases, may occur intermittently or persistently, without any marked irregularity of pulse, in a relatively comfortable, ambulant patient, with relatively slight cardiac symptoms.

McKenzie, discussing prognosis in various forms of valvular disease states that mitral stenosis, occurring after maturity, the result of passed rheumatic infection, offers the best prognosis.

Mitral stenosis existing in a pregnant woman requires special attention. The recently published conclusions of an extensive study of this subject in the New York City Cardiac Clinic indicates that women who have good compensation, no evidence of myocardial degeneration and are not embarrassed by a work test, pass through labor successfully; that pulmonary edema during or soon after labor causes a high

mortality among those having poor compensation, myocardial degeneration or reacting badly to the work test.

The work test referred to is lifting a 12-pound dumb-bell from the floor to above the head 25 times; this exercise does not embarrass those with good hearts or hearts capable of carrying them through labor. Our knowledge of the great amount of work taken from the heart by rest in bed and the marked improvement in its functional capacity under such conditions, should lead to as good results in the care of pregnant women with mitral stenosis by prolonged rest in bed, as such treatment affords the tuberculosis.

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*Discussion:* DR. LEO A. RIELY, Oklahoma City.

One of the outstanding medical developments in the great war was the prominence given to mitral stenosis. General Order No. 21 did not permit of any one entering the U. S. Army who had a mitral stenosis or aortic regurgitation. The heart muscle being strong, no other murmurs counted.

The incidence of mitral stenosis in the adult and especially in females is almost as great as insufficiency.

Most physicians who are not watching out for these symptoms do not believe that, and older authors did not put the stress on finding these defects as we do now.

Mitral stenosis is practically never found before puberty, but has a slow and progressive development, giving the history of growing pains, tonsilitis, rheumatism and chorea or some acute infection in childhood.

The development of a dry cough, later with basal rales, often point more to the lungs than cardiac region and many cases are thought to be developing tubercular troubles.

The old idea that mitral stenosis does not allow activity of tubercular origin does not hold water and we frequently find them present in the same individual.

The mitral facies is characteristic of the trouble, *i. e.*, a florid complexion with red cheeks and lips, venules standing out in prominence giving them an entirely different aspect from the pale anaemic appearance of the aortic facies. The quick, snappy first sound is produced by the ventricle contracting quickly on its partly filled contents. Also this does not allow the ventricle to hypertrophy.

The thrill is quite marked in many cases. The presystolic rumble with dilation to the left and, in incompetency, of dilation to the right, also. Diffuse apex beat also is noted.

As the heart muscles become impaired and as extra work or sudden exertions are put upon it auricular fibrillation begins to develop with edema of legs, enlargement of the liver and spleen and even sometimes a pulsating liver.

McKenzie says that 90% of hearts fibrillate as they become more damaged. Rest and digitalis in large enough doses, *i. e.*, 22.5 cc. of the tincture to a man weighing 150 pounds, is quite a specific for these irregularities with pulse deficits.

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## CHEMICAL AND MICROSCOPICAL DIAGNOSIS FOR THE GENERAL PRACTITIONER.

F. T. GASTINEAU, M. D.,
Pawnee, Okla.

Far be it from me, to offer myself as a judge of just what laboratory work each general practitioner will be able to do; but being familiar with the work done around a clinical laboratory and having recently been in general practice, I will attempt to give the tests and interpretations that I have found most useful in general work. The function of the laboratory is not to make a diagnosis but to assist the physician in doing so. To be of most use the laboratory findings should be correlated with the physical findings and clinical symptoms.

We have attempted in this paper to condense enough material for a text book into a few thousand words. No doubt this will be A. B. C.s to many of you, but some who graduated a few years ago were not so fortunate in receiving this training. Therefore, the purpose of this paper is to call attention to some of the tests that are found most useful and easily done in the office.

We will discuss only blood, urine, sputum, gonorrheal smears and diphtheria cultures.

### BLOOD.

In the routine examination of blood, it is advisable to determine the percentage of hemoglobin, the number of red cells, the hemoglobin index and the number and kinds of white blood cells present. When occasion demands, we may test for malaria, typhoid, and syphilis.

Theoretically, the hemoglobin content of normal blood is taken at 100%, but ac-

cording to the arbitrary standards now in use, it is considered normal if it ranges anywhere from 80% to 100%. The normal number of red cells varies from four and one-half to five and one-half million; the lower figures being found in women and children and the higher in men. The above relation between the percentage of hemoglobin and the number of red blood cells gives a hemoglobin index of one or slightly less.

ANEMIA.

The two primary anemias, chlorosis and pernicious anemia, stand at the two extremes of the scale. Chlorosis gives a marked reduction of hemoglobin with slight reduction in number of red blood cells, with prominence of cacrocytes and normoblasts. Pernicious anemia, shows marked reduction of red blood cells, with relatively high hemoglobin, and prominence of paikilocytes, macrocytes, and megoloblasts; together with anisocytosis, polychromatophilia.

There is a graduation in the other anemias from the blood picture of chlorosis to that of pernicious anemia, in the following order: (1) Chlorosis, (2) Anemia due to poor hygienic condition, (3) Due to constitutional diseases, (4) To certain poisons as lead and arsenic, (5) Secondary to tumors, (6) Secondary to intestinal parasites, (7) Pernicious anemia.

The following table taken from Stitt, gives the normal number and kinds of white blood cells present.

Polymorphonuclears, 65 to 70% or about 5000 cu. mm.

Small lymphocytes, 20 to 30% or about 1500 per cu. mm.

Large lymphocytes, 2 to 6% or about 200 per cu. mm.

Large mononuclears, 1 to 2% or about 100 per cu. mm.

Transitionals, 2 to 4% or about 200 per cu. mm.

Eosinophiles, 1 to 2% or about 100 per cu. mm.

The number and proportions may vary in health to a greater or less extent. The value of a white blood count lies in knowing wherein the leycocytes vary from the normal in number and proportion.

*Leucopenia* is a term used to designate a fewer number of white blood cells than normal. The presence of 5000 leucocytes would indicate a slight leucopenia, while the presence of only 2000 would constitute a marked leucopenia. A leucopenia may be produced by the following diseases: (1) Typhoid fever, (2) Influenza, (3) Uncomplicated pulmonary tuberculosis, (4) Malaria, (5) Exophthalmic goiter, (6) shock, (7) Measles, show a marked reduction of leucocytes in the early stages, (8) Chronic alcoholism, which is now of only historic interest.

*Lymphocytosis* is a term used to designate an increased number of lyphocytes. The condition in which lymphocytosis may occur are normally in children, pathologically in: (1) Hereditary syphilis, (2) Enlarged tonsils, occasionally, (3) Rickets, (4) Pellagra, (5) Measles, (6) Mumps, (7) Uncomplicated T. B. except T. B. of serous membranes, (8) Typhoid. Frequently lymphocytosis and leucopenia go hand in hand.

*Leucocytosis* is a term used to designate a greater number of white blood cells than normal. The chief diseases that produce marked leucocytosis, are: (1) Cholera, (2) Scarlet fever, (3) Pustular stage of smallpox, (4) Erysipelas, (5) Diphtheria, (6) Pneumonia, (7) Articular rheumatism, (8) T. B. of serous membranes, (9) Suppurations that are not well walled off, (10) Hemorrhage, at first causing a leucopenia, but with a marked leucocytosis following in a few minutes. (Crile J. A. M. A., Jan. 15, 1921.) (11) Malignant growths, fifty per cent of the cases, (12) Drugs, such as chloroform, ether, salicylates, and quinine.

*Eosinophilia* means an increased proportion of the eosinophiles. This condition is sometimes found in cases afflicted with: (1) Intestinal parasites, (2) Bronchial asthma, (3) Eczema, (4) Psoriasis, (5) Scabies, (6) Scarlet fever.

*Differential Diagnosis*—We may have difficulty at times in differentiating scarlet fever and measles from the clinical symptoms alone, but a blood count will easily tell the difference, as measles will produce a leucopenia with a lymphocytosis, while scarlet fever will produce a leucocytosis with possibly an eosinophilia.

Pertussis, in the early stages or atypical cases, may be differentiated from a common cold or bronchitis by a blood count, as pertussis will give a very marked leucocytosis (25,000 to 50,000), with a predominance of lymphocytes, while a cold will give practically a normal count.

A blood count may be of service in differentiating shock and hemmorrhage. The latter producing a marked leucytosis, while the former usually produce a leucopenia.

However, since many cases of shock are accompanied by some trauma, there may be a slight leucocytosis.

Sterile pus and the debris from a cold abscess will not produce a leucocytosis.

Sepsis may be differentiated from miliary T. B. and typhoid in that the two latter produce a leucopenia and a lymphocytosis, while the former usually produces a high count with a predominance of polymorphonuclears; even though the count should be low in sepsis, the differential will show a big percentage polymorphonuclear.

*Prognosis*—There is no relation between the number of leucocytes and the amount of pus present, as in the beginning of a septic infection the body may react well and produce a larger number of leucocytes, while there is yet a small amount of pus, while later in the disease, when a great amount of pus is present, the reaction of the body may be reduced and only a small number of leucocytes present.

The reaction of the body to injury of septic infection is in direct proportion to the number of leucocytes present, while the severity of the injury or virulence of the infection is in direct proportion to the percentage of polymorphonuclears present.

The resistance of the patient then may be said to be a ratio between the number of leucocytes present and the percentage of polymorphonuclears.

Gipson's chart illustrates this very nicely:

| Number of Leucocotytes | Percentage of Polymorphonuclears |
|---|---|
| 35,000 | 95. |
| 30,000 | 90. |
| 25,000 | 85. |
| 20,000 | 80. |
| 15,000 | 75. |
| 10,000 | 70. |
| 5,000 | 65. |

As long as a line connecting the points representing the number of leucocytes on the left and percentage of polynuclears on the right runs horizontal or with a slightly downward slope the prognosis is said to be good.

When the line slopes upward to the right, the condition is more unfavorable, and the steeper the slope the graver the prognosis.

As a word of caution, a negative blood count must not be taken at its face value when the clinical symptoms denote otherwise. To illustrate: A short time ago we brought a patient to the University Hospital with the clinical symptoms of appendicitis. The blood count was normal, yet the appendix was gangrenous. Dr. Langston says that a normal leucocyte count is the usual early finding in cases of gangrenous appendicitis, the count rising as absorption takes place.

*The Wasserman*—Occasion frequently arises to test the blood for syphilis. This is done by means of the Wasserman test, which is too difficult for the general practitioner to make; but judging from the number of specimens that reach the laboratory in a useless condition, it will not be out of place to say a few words about the proper care of the specimens. If the blood is drawn in a vacuum tube the only precaution necessary is to put it on ice until mailed, being sure to use a special delivery stamp, that it may reach the laboratory in the shortest possible time, where it will again be put on ice. If a vacuum tube is not at hand, use either a dry sterile syringe and container, or see that they are properly sterilized and rinsed with sterile normal saline; otherwise hemolysis will take place. If it takes the specimen over twenty-four hours to reach the laboratory, it is well to let the blood clot, when the serum may be removed and sent without danger of hemolysis.

## URINE.

Aurinalysis half made is a dangerous procedure. Yet it is a deplorable fact that many of us will test for reaction, specific gravity, albumin, and sugar, and finding nothing wrong will declare the urinalysis negative. This conclusion may be right or it may be very erroneous, as many cases of nephritis will show an albumin-free urine.

In a routine urinalysis observations and tests should be made to determine: Color, odor, specific gravity, reaction, glucose, albumin, indican, and acetone, while the microscopic examination may reveal red blood cells, pus cells, epithelial cells, crystals and casts of various kinds.

A normal urine is transparent, acid in reaction, of a pale yellow color, has an aromatic odor, and a specific gravity of 1012-1025. To be of the most value the specific gravity should be made on the twenty-four hour specimen. In disease it varies from 1.002 to 1.060. The low gravities are seen in diabetes insipidus, hysteria and chronic interstitial nephritis; however, the specific gravity of urine from a normal person may be quite low for a few hours at a time. High gravities are seen

as a rule after operations, hemorrhages and excessive perspirations. The very high gravities are usually due to sugar in the urine, although there may be a moderate amount of sugar in the urine when the specific gravity is only 1.010 to 1.025, and for that reason we should not let the specific gravity determine whether or not a test for sugar should be made.

*Diabetes*—Glycosuria may be classified as follows: (1) Alimentary glycosuria, depending upon the sudden concentration of the dextrose of the blood above the normal renal threshold, by the ingestion of large quantities of soluble corbohydrates. Magnus-Levy says this does not happen after the administration of starch, as in this case no more sugar is absorbed than can be metabolized in the body. (2) Renal glycosuria, depending upon lowering the renal threshold below normal. (3) Glycosuria due to disturbances of the endocrine system, particularly diabetes Mellitus.

Alimentary glycosuria may be distinguished by giving 100 grams of sugar on an empty stomach to a person whose urine has previously been made sugar-free by fasting. The urine of a healthy person will remain free while the diabetic will show a marked glycosuria in two or three hours. Diabetics may be classified as: (1) Severe, if sugar tolerance is below 10 grams; (2) Moderate, if from 10 to 50 grams; (3) Mild, if 50 grams or more can be tolerated.

A diabetic urine is usually pale, transparent, and acid in reaction. Acetone is sometimes present. The urine may be passed in large quantities, sometimes as much as fifteen or twenty quarts in 24 hours. In the lighter cases the sugar may appear only at stated intervals during the twenty-four hours, and for that reason when diabetes is suspected, a 24-hour speciment should be tested. Not only may the urine be free of sugar for several hours during the day, but it may be free for several weeks, only to reappear upon some slight indiscretion of diet, or some sudden nervous shock.

Glycosuria must be distinguished from lactosuria, for the latter is found in about 20% of nursing mothers, and in about 80% of mothers who do not nurse their children. This condition does not constitute a diabetes. To differentiate lactosuria from glycosuria, the fermentation test is most useful, as lactose is not broken up by the yeast within the first 24 hours.

*Nephritis*—Hyaline casts and albumin may be found in the urine temporarily in the following conditions, without sufficient change in the kidney to be classed as a true nephritis, viz: After anethesia, after physical or mental strain, in severe anemias, in chronic congestion of the kidneys, in diabetes, and in febrile diseases. Nevertheless, the presence of hyaline casts and albumin in the urine, continued over a period of time generally means a chronic nephritis. The amount of albumin and the number of casts is a good index to the severity of the disease. Casts and albumin are not always found together. But the presence of either may indicate a definite renal lesion. Just as the presence of hyaline casts and albumin does not always mean a true nephritis, neither does their absence exclude its diagnosis. Granular casts on the other hand, always indicate the presence of a severe nephritis; while blood and pus casts are found only in grave conditions.

"It is probable that one of the earliest symptoms of chronic nephritis, coincident with the presence of nocturnal polyuria, is the inability of the kidney to concentrate the end products of metabolism in the urine, a fact manifested by the fixation of the specific gravity."—Langston.

*Indican*—The action of the intestinal bacteria, upon the proteids of the food, results in the formation of indol., which also may be formed by the putrefaction of proteids that goes on in the fluid of an empyema or the cavity of a gangrenous lung. It is absorbed into the blood as indol and after further oxidation is excreted by the kidneys as indican. Indican may be present in small quantities in the urine of healthy adults and in large quantities in the heavy meat eaters. It appears in increased quantities in any condition that permits an increased putrefaction in the intestines, therefore, it is found in abundance in the urine of patients suffering from intestinal obstruction. It is also increased in intestinal indigestion or "billiousness." It has been found experimentally that at least a part of the symptom complex of "billiousness" may be produced by giving small doses of indican to healthy persons.

*Acetone*—The presence of acetone in urine seems to depend on the lack of the body's ability to utilize carbohydrates. So long as the patient is able to oxidize a sufficient amount of carbohydrates to meet the bodily demands, the acetone is absent from the urine, but appears as soon as a sufficient amount of carbohydrates is not oxidized, and increases in direct proportion to this lack of ability to utilize carbohy-

drates, presumably from the faulty katabolism of fats. Not only will acetone appear when the patient is not able to utilize carbohydrates, but also when there are no carbohydrates to be utilized; thus we may find acetone in cases of starvation, lasting over three days, and in cases on carbohydrates—free diet in diabetes, the acetone will disappear in the latter condition when carbohydrates are added to the diet. Therefore, we find acetone present in severe diabetes, starvation, and many digestive disorders, febrile conditions especially in influenza and the exanthemata in children. It may also be present for a few days before and after delivery, and after ether and chloroform narcosis.

BACTERIAL EXAMINATIONS.

A knowledge of bacteriology often saves a great deal of suffering and frequently a life. The general practitioner will find ninety percent of his bacterial work will be covered by three tests, viz: Examination of sputum for T. B., urethral and cervical smears for gonococcus, and throat cultures for diphtheria.

*Sputum*—"Pulmonary tuberculosis has no characteristic sputum." In the incipient stages there may be little or none, but as the disease progresses, with few exceptions, the amount of sputum increases. With our present methods, a diagnosis of tuberculosis can usually be made long before tubercle bacilli can be found in the sputum. Consequently one or even several neagtive examinations mean nothing. A positive finding, however, is conclusive proof that the disease exists. We are prone to make a diagnosis of advanced tuberculosis from the symptoms and physical findings without examination of the sputum. "It is because of this neglect that many cases of bronchiectasis, pneumokoniosis, chronic empyema, and even chronic cardiorenal diseases, are mistaken for tuberculosis."

*Cervical and Urethral Smears*—Not all purulent cervical and urethral discharges are due to gonoccoccus, therefore, a microscopical examination should be made, so that proper treatment may be instituted. A correct diagnosis in these cases will save the physician, as well as the patient, many an embarrassing situation. Just recently a married woman applied to me for treatment for a condition that she thought was gonorrhea. As she said her husband was the only possible source of infection, she was thinking seriously of a divorce. You may imagine her change in attitude when the microscopic examination showed no gonococci but a germ that closely resembled the bacillus pyocyaneus. There being no sign of any infection in the husband, I believe that a lowered resistance allowed some of the normal vaginal flora to become pathogenic. Not only will the bacterial examination be of service in diagnosing these conditions, but it is almost indispensable in telling when a gonorrheal endocervicitis is free from gonococcus. A colleague once brought us a cervical smear from a woman who had been married three times and in each case had infected her husband. She was so sure that she was not the offending party that she offered herself for examination. The clinical symptoms and physical findings were negative but the cervical smear was positive. I take this opportunity to state that vaginal smears are never satisfactory.

*Diphtheria*—Before the days of antitoxin about 40% of the diphtheria cases proved fatal, but since the days of antitoxin the mortality has been reduced to less than ten percent, the prognosis depending upon the promptness with which a suitable dose of antitoxin is administered.

It is not practical to give antitoxin to every child with a spot on his tonsil. In fact, only a small percentage of these cases are diphtheria, and the administration of anti-toxin would be not only a needless expense but would possibly sensitize the patient to horse serum. When the child is seen early, before a clinical diagnosis of diphtheria can be made, a swab should be taken for diagnosis and the case treated as tonsilitis until proven otherwise. However, if the child is not seen early in the disease and a clinical diagnosis can be made, or even the case looks very suspicious, do not wait for a laboratory diagnosis, but give anti-toxin at once, and take a swab for confirmation of your diagnosis. A diphtheria membrane must have a beginning. When the membrane is small and on the tonsil, it cannot be differentiated from tonsilitis without a culture. It is not fair to the child to let the case run until a clinical diagnosis can be made, as many precious hours may thus be lost. When the laboratory is some distance away, the time reqpired for a report makes its services impractical. Therefore, in order easily and successfully to hnadle the diagnosis, quarantine, and release of the quarantine on diphtheria cases, it is very convenient to be equipped for making cultures in your office. In doing this, we found our greatest difficulty in keeping fresh media, and ob-

taining a suitable incubator at moderate cost.

We prepare Dorsett's Egg Media, and use for heating in place of the inspissator, an electric sterilizer on low heat. Any method of heating may be used, providing the tubes are slanted and the heat sufficient to harden the media, without forming bubbles, which will happen if high heat is applied. If used fresh, no other sterilization is necessary, but if intended to be kept for any length of time, the tubes should be kept at a temperature of 75 degrees for one hour on three successive days.

For an incubator, an ordinary wooden box may be used. This is fitted with an electric light bulb and thermostat. To make and equip this incubator will cost less than $3.50. Since a temperature ranging anywhere from 90 to 100 degrees F. is suitable for a diphtheria culture, the tube may be carried in the inside vest pocket for incubation. But when a suitable incubator can be constructed for the mere sum of $3.50, you cannot offord to bother with it.

On account of the cumbersome nature of our State Laws, in regard to the release of diphtheria quarantine, you will find that comparatively few release cultures are made in the rural districts. The parents object to paying a physician for coming to see a child that appears to them perfectly well. There is an expense of twenty or twenty-five dollars, that seems to the hard-run farmer to be absolutely unnecessary. He thinks that the thirty-day quarantine which is required, when no cultures are taken, to be unjust; and the physician, knowing that in most cases the cultures are negative in about ten days after the throat is healed, releases the quarantine.

During the diphtheria epidemic of last winter, being county superintendent of health of Pawnee County, we volunteered to do the bacterial work for the physicians in our county. Several took advantage of the offer. We found in this work, and in our own cases, that it was no uncommon thing for a throat to be positive two weeks after it was apparently well. Bearing this in mind, we wish to urge that you follow the strict letter of the law in handling diphtheria cases. In justice to the public at large, you cannot do otherwise.

### SUMMARY.

This paper deals only with the laboratory work that can be done in the offire. It is a plea to the physician, not to cast aside one of his most useful means of diagnosis; but where there exists a reasonable doubt, to make the necessary laboratory tests and correlate the results with his clinical symptoms and physical findings.

Disease of the red blood cells will produce anemia, grading from chlorosis to pernicious anemia.

Many diseases produce such changes in the leucocytes as to make them of unlimited value, in differential diagnosis.

A negative blood count must not be taken for its face value, when the clinical symptoms denote otherwise.

A partial urinalysis may be dangerous to the patient. Sugar in the urine should be identified. Glycosuria should be classified. Hyaline casts and albumin in the urine do not always mean a nephritis, unless extending over a period of time.

Indican assists in the diagnosis of intestinal indigestion.

Acetone in the urine depends upon the body's lack of ability to utilize carbohydrates, probably from the faulty katabolism of facts.

A negative examination of sputum for T. B. means nothing. A positive finding is conclusive proof that the disease exists.

A correct diagnosis on uretheral and cervical smears will save a physician, as well as the patient, many an embarrassing situation.

Make cultures for diphtheria on your cases of tonsilitis; play fair with the children. Do not needlessly sensitize your patients against horse serum. If a clinical diagnosis can be made, do not wait for laboratory diagnosis. If you do not have access to a nearby laboratory make the cultures in your office. Be sure to make release cultures.

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*Discussion:* WANN LANGSTON, M. D., Oklahoma City, Okla.

This is a timely paper; in this day when the pendulum has swung to the ultra-technical side of diagnosis and a reaction has set in and there is danger of going to the other extreme in emphasizing clinical diagnosis to the exclusion of the laboratory, it is well to pause and consider the vast importance of careful scientific investigation and conservative interpretation of valuable laboratory procedures.

Many of the procedures the doctor has called to your attention are well-nigh indispensable to the scientific practice of medicine. It is doubtful if there is a single diagnostic method that gives more valu-

able information than a careful examination of the blood. It is pathognomonic in perhaps as many instances as is any procedure. For example, in malaria, the leukemias, etc. It is the main differential method in others, as splenic anemia, primary anemias from certain secondary ones, etc.

It is such a simple matter that it is surprising that it should be neglected. A few minutes study of a properly made blood smear, without any other examination, may yield information of vast importance.

A word of caution is necessary here. It is a dangerous thing to accept a negative blood finding at face value when the clinical findings point to pathology. The blood is extremely sensitive to various changes within the organism, but it is not absolutely infallible. Normal blood count in some cases of acute appendicitis is an example.

Caution No. 2. To make a white blood count without a careful differential study is always contra-indicated. It is the relative numbers of the various type of cells that is important, rather than the absolute normal.

A word about the examination of the urine. To examine for alubumin and tell the patient he has no albumin, therefore his kidneys are sound, is very hazardous. The absence of albumin and casts from the urine is of relatively small value. There may be severe pathology without finding either at any given period. The ability of the kidney to concentrate is the prime consideration. This is determined easily by taking the specific gravity frequently under varying conditions. A fixation of specific gravity at a low level is an important diagnostic point.

I would emphasize one other point in the doctor's paper, with reference to the examination of smears for gonococci. Vaginal smears nine times out of ten are absolutely unsatisfactory, and should never be made. After having cleaned the vulva, gentle massage of the vulvo-vaginal glands and of the urethra will frequently yield satisfactory material for examination. Then make an additional preparation from the cervix. These preparations can be satisfactorily studied, while those made from vaginal discharge are so contaminated that it is most often impossible to form an opinion.

In conclusion, I would add that laboratory methods form an important diagnostic procedure that should not be neglected. These should not be depended upon to make a diagnosis, to the exclusion of other methods, and then condemned in case of failure; but the symptoms elicited by this means must be properly interpreted and evaluated along with the other symptoms in making a diagnosis.

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*Discussion:* J. A. RODDY, M. D., Oklahoma City, Okla.

During 15 years of practice, spending half my time in clinical work and the other half in laboratory work related thereto, I have listened to many papers on the same subject as the one we have just heard, and in my humble opinion Dr. Gastineau's paper is by far the best I know of. It is easy to think of and offer suggestions for slight alterations that might enhance it, but such a gem had better be accepted as is rather than risk marring it. I feel sure the copy of the State Journal containing this monograph will be a valuable addition to our desks, often turned to with pleasure and profit.

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## IMPORTANT FACTORS IN KIDNEY SURGERY.

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Successful kidney surgery depends upon early diagnosis and preliminary treatment. The practitioner must recognize certain significant symptoms and the specialist must locate the cause.

Pus, blood, pain, bladder irritability and abdominal masses call for prompt and scientific investigation.

Several years ago at Barnes Hospital, three hundred cases of kidney infection were analyzed and only 9% were admitted with positive diagnosis, though 100% had definite evidence of kidney infection. This type of kidney infection gives the highest mortality, whereas, with early diagnosis and preliminary treatment mortality in three hundred kidney operations is as low as .3 of 1%.

Urinalysis is the first important step in early diagnosis of kidney lesions. Pus in the urine is never normal. Investigation of the so-called "few pus cells" may be an early T. B., pyelonephritis or stone. Blood in the urine should always be given prompt consideration and investigation, as T. B. tumor and stone are the most frequent and

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common causes for its production. Pain, whether it be abdominal pain or definite kidney pain with its associated muscle spasm and sensitiveness calls for a most rigid investigation.

Bladder irritability should always have the upper urinary tract excluded as the original source of the infection unless definite pathology in the bladder accounts for the symptoms. Apply the Golden Rule in this type of case. All cases of cystitis that do not respond in two weeks to appropriate bladder therapy should have the kidneys investigated.

In over one hundred cases of T. B. of the kidney, bladder symptoms were treated over a period of three and one-half years and both kidneys were involved in 29% of the cases.

Abdominal masses that are not definite in their origin should receive most careful diagnostic investigation to exclude kidney.

All or one of these symptoms, pain, pus, blood, bladder irritability and abdominal masses may be present in a given case and the degree of manifestation small or great, but careful and diligent search must be instituted in all.

The cystoscope, ureteral catheter and x-ray, with the aid of the phenolsulphonphthalein functional test, pyelographic studies and blood chemistry are the means at our hand to fathom the symptoms just enumerated. We see then, that the first important step in successful kidney surgery is early diagnosis firmly and conclusively established by the methods already mentioned.

The second important step is the preliminary treatment necessary to bring the patient up to the highest degree of safety when surgery is done.

I will not discuss the usual routine methods employed in all cases as to condition of the heart, blood, etc., but will confine my remarks to the points of interest to be noted in checking up the blood chemistry, particularly the blood nitrogen, the improvement of kidney function, drainage of kidney both by surgery and ureter catheter and the restoration of the patient's resistive power.

Let us mention a few cases where the preliminary steps for safe kidney surgery are all important. Acute pyogenic infections of the kidney, especially in children, where nephrectomy is indicated and where they are acutely sick and septic should have the benefit of preliminary drainage, either by ureter catheter or nephrostomy with a secondary nephrectomy, for by so doing a general, and as a rule, a marked improvement is noted in their condition, blood chemistry and renal function. It allows the good kidney to accommodate itself to its compensatory duties and rid itself of toxins, gives time for blood transfusion where indicated, sepsis is greatly reduced, patient's resistive power enhanced and major surgery made safer.

Acutely blocked kidneys with associated infection and hydronephrosis are put in shape for surgery by ureter catheter drainage and lavage.

Cases of chronic pyelonephritis necessitating removal of kidney are made much safer risks by preliminary drainage per ureter catheter.

In patients with only one kidney, where calculi are present and acute retention in the pelvis with infection suddenly develops, preliminary ureter catheter drainage turns a hopeless case of surgery into a fair risk.

In the case of long standing kidney infection, where the diseased kidney is irreparably damaged and the good kidney is secondarily infected, ureter catheter drainage and lavage paves the way for safe surgery.

In bilateral surgical conditions of the kidney, such as stones, where nephrectomy is indicated in one kidney and drainage in the other, the good kidney should be operated upon first. This gives the patient the benefit of what little function may be left in the destroyed kidney and guards against a sudden blockage of urine in the good kidney.

The importance of ureter catheter drainage with consequent relief of retention and infection in some kidney infections that look surgical, but which are transformed into non-surgical cases, as evidenced by pick-up in function, restoration of blood chemistry within normal limits, reduction in retention and infection and freedom from local disturbances. It is really remarkable to see the comeback in some of the badly damaged kidneys under intensified ureter catheter drainage.

The importance of transfusion in patients suffering from anemia, both pernicious and secondary toxic anemia prior to surgery, must be remembered.

In cases of stone in the kidney associated with infection and retention much better surgery is accomplished if preliminary ureter catheter drainage is instituted. Freedom from retention and infection offers stronger union and less danger of

fistula in pyelotomy and nephrotomy.

In cases of unilateral kidney infection where surgery is indicated, preliminary catheter drainage will lessen the chances of a secondarily infected sound kidney and materially enhance the patient's general condition and promote better healing of the wound.

Careful search for absence of one kidney and congenital malformations of the kidney is important before any surgery is done.

Should any surgery suddenly arise in the pregnant woman and pyelitiis develop or is already present as an added complication, ureter catheter drainage as a preliminary measure is of inestimable value. It may tide the woman through her pregnancy and in any event it will make surgery safer.

In uremia associated with an acutely blocked kidney other means beside drainage must be promptly instituted. Hypodermoclysis, proctocylsis of 4% soda, forced fluids and free elmination is important. Twenty-four hour summary of intake and output is very essential. In desperate cases we have seen excellent results come from blood letting with the reintroduction of 10% glucose into the blood stream. Acidosis must be carefully and promptly treated by alkalies and glucose intravenously.

To illustrate the points just mentioned I will cite a recent case in brief.

A patient entered the hospital with an acute block of the left kidney. A large sensitive mass was seen to occupy the kidney region with such prominent bulging in the left posterior flank that peri-nephritic abscess was to be considered. Temperature 101, blood count 17,500 and blood nitrogen 165. Patient was very uremic and attending doctor stated that only three ounces of urine had passed in the last 48 hours. Abdomen was tremendously distended and patient was very toxic. Catheter was passed to exclude bladder retention and one ounce was obtained. Urinalysis showed r. b. c., pus and colon bacilli. Cystoscopy was done and the following noted: No ingrowth of prostate, no stone, tumor, ulcer or diverticulum. Right ureteral orifice gave evidence of an old lesion with destruction of the kidney. It was scarred and puckered with fibrin deposit clinging to edges. No urine could be seen ejaculating. It was impermeable to catheter. Probably an old auto-nephrectomized kidney. Left orifice was puffed and edematous. Catheter passed and met a temporary obstruction about one inch beyond bladder, then passed to kidney. Twelve ounces of retention was noted. Super-natant fluid was clear, then came residue of dirty urine. Catheter was left in place for continuous drainage. Forced fluids, hypodermoclysis, rectal tap, 4% soda and free elimination was ordered. Summary of intake and output was carefully checked for 24 hour periods. Uremia was so pronounced 500 cc. of blood was withdrawn and a like amount of 10% glucose injected. The immediate improvement of this case was remarkable. Nitrogen in 24 hours dropped to 67, nearly 100 points, and urinary output was 1200 cc's for 24 hours. Ureter catheter was changed in a few days and patient radiographed. Plate was suspicious of a calculus shadow in lower ureter about one inch above bladder.

PSP appeared in 8 minutes and totaled 40% in one hour from left kidney and bladder. At a later date, hydronephrosis and hydro-ureter were demonstrated by pyelographic study, as was the calculus in the ureter. Stone was removed by intravesical manipulation. Points of interest in the case were the following:

1. Having definite knowledge that the blocked kidney was the good kidney and the only one of service.

2. Sudden drop in blood nitrogen instead of a gradual decline,—a good differential point betwen an acute and chronic infection.

3. Low leucocyte count which is the rule in kidney infection rather than a high count which points to a perinephritis.

4. Practical demonstration of the pelvic retention with its perfectly clear supernatant fluid, followed by dirty urine when the bottom of the hydronephrotic sac was reached.

5. Value of ureter catheter drainage, x-ray, pyelographic study and P. S. P. in both diagnosis and preparation of patient for any surgical intervention, minor or major.

### ANESTHESIA.

Gas and oxygen is the best anesthetic. No renal irritation occurs and lung irritation is reduced. This is important as nephrectomy for T. B. occurs in about 30% of the cases. A little ether can be used in some cases to give primary relaxation.

### POSITION OF PATIENT AND INCISION.

Best position is lateral one. Patient's arm and leg on the side of operation are

extended. Patient is elevated at the break of the rib with the under arm through to the front, rather than back of him. Incision is made from below 12th rib obliquely downward and forward between the rib and crest of the ileum, keeping away from crest of ileum and nearer the rib margin. Avoidance of the 12th dorsal, ileo-inguinal and ileo-hypogastric nerves is important. Severance of the costo-vertebral ligament to mobilize the rib with extension of the incision downward and forward will give freer access to the kidney and in nearly all cases resections of the rib will not be necessary nor will heavy retraction. Any injury to pleura should be repaired at once.

IMPORTANT STEPS IN VARIOUS PROCEDURES.

Tugging on kidney pedicle is to be avoided as it is conducive to shock. Aberrant vessels should be carefully searched for. Should the peritoneum be opened it should be promptly sutured. In nephrectomy, it is best to free ureter, ligate it and cauterize. Vessels should be clamped en masse with large curved kidney clamps. Kidney should be relaxed so the vessels are put on tension and the kidney cut far enough away from the clamp so that the tip of the vessels are in sight. Transfixing the pedicle between vessels with figure-of-eight stitch on nedle and tying the vessels individually fortifies admirably against hemorrhage. When kidney is to be nephrotomized it should be opened with a blunt instrument. We use a large liver needle threaded with silver wire. Needle is inserted into the part of kidney to be opened; capsule is cut between wire; and by sawing on the wire, kidney is opened from below upward and very little bleeding occurs. In case of pyelotomy, open the pelvis posteriorly thus avoiding pelvic vessels and keep away from urtero-pelvic juncture. After removal of stone pelvis should be irrigated, small probe passed down ureter to see that it is patent and walls carefully stitched. A flap of fatty capsule stretched over the line of incision prevents leakage and makes union stronger. In fixation of kidney, it is important to see that ureter is free of any kinks and no aberrant vessels are in the immediate neighborhood.

POST OPERATIVE TREATMENT.

Elimination is the chief object in kidney cases. One should always anticipate that uremia may occur and treat the case accordingly. Immediately after operation, hypodermocylsis, rectal tap 4% soda or glucose (the latter to combat acidosis) should be instituted. Water by mouth increasing rapidly to force water as soon as nausea ceases is very important. By forced water is meant at least a glassful every hour or half hour if necessary. Skin should be kept warm in order to allow free skin excretion. Enemas should be given if the patient suffers from distention. Sedatives should be given to control pain when indicated. Food should be increased from liquids to solids after the bowels have moved. This keeps up their strength and protects them against acidosis and distention. Urinary antiseptics should be resumed by the second day if possible. Average length in bed is from 10 to 14 days, except in fixation of kidney, where three weeks in bed is considered necessary. If shock occurs hemorrhage and excessive mutilation are the important factors in its production. Hemorrhage is single, severe or fatal. Packing with gauze and hemostatics internally and intra-muscularly will usually control bleeding. Shock is treated by the ordinary standard methods familiar to you all.

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## HOME MANAGEMENT OF OCCIPITO-POSTERIOR POSITION.

C. V. RICE, M. D.,
Muskogee, Okla.

During the past few months the realization has again come to us that we are living in the most wonderful age the world has ever known—the age of the greatest advancement. In every vocation we have seen this and the desire to give to mankind the best for pleasure, comfort and betterment. In the practice of medicine and surgery we conscientiously do all we can to improve our methods and to alleviate unnecessary suffering; but has it occurred to you that we neglect the conditions that seem impossible to improve? Our hospitals are better each year and show the advancement made by our profession but unfortunately, we have patients who, for various reasons, cannot enjoy their advantages. We find this especially true in our obstetrical work where the home patient may not be necessarily prejudiced against the hospital but is financially unable to go there. Then we find its inconvenience in the rural locations and the rural doctor has practically all of his obstetrical cases in the home. The methods

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we use in the hospital cannot be used in the home and when we know that 80% of obstetrical work is there and a large per cent will continue to be for a long time, we should realize that management of these cases deserves more thought.

Nothing taxes the doctor so much as a long, tedious labor in the home and the occipitoposterior position, as a rule, is a long and tedious one. The causes of this condition vary, but perhaps the most plausible ones are weak, feeble, irregular uterine pains and a damaged pelvic floor. The feeble pains lack the force to cause flexion of the head and the imparied levator ani fails to push the occiput to the front. Other causes may be a large foetal head, pendulous abdomen, slight contraction of the pelvic brim or any obstruction of the parturient canal that will involuntarily prevent rotation.

The diagnosis of this condition, in the majority of cases, is not so easily made as our text-book informs us, and we have all had the experience of not recognizing the position before the head emerged. We cannot always tell by the abdominal palpation. With some abdomens we can feel every part of the foetus and outline it perfectly. These cases have a relaxed abdominal wall and very little amniotic fluid; but in the primipara we usually find a rigid abdomen which makes a positive diagnosis almost impossible by palpation alone and here we find it very hard indeed to outline the foetus and to distinguish a post from an anterior position. We are told that on palpating the abdomen we can outline the back in the right or left flank, the breach in the fundus, the head at the brim and the fingers dip in the hollow between the breech and head, where the limbs are felt around the umbilicus. This may be accomplished with a relaxed, thin abdomen, but it is quite impossible with one that is tense and rigid.

The foetal heart tones do not aid us to any great extent, for with the rigid abdomen we can hear the heart tones about as well in one abdominal position as another; in fact, we might say it acts as a sounding board. The only positive way to make a diagnosis of this condition is to get a complete dilation and make an internal examination, locating the ear and if we find it pointing to the mother's back we are sure of our diagnosis

The first suspicions we have of an occipitoposterior are a high head pressing against the pubic arch, weak, irregular pains and slow dilation, so slow that there seems to be no progress in labor. On making a rectal or a vaginal examination, we will find the head crowded to the front against the pubic arch and a large space between the head and the sacrum. When you suspect the occipitoposterior position, tell the family that you may have a long, tedious labor and do not be influenced by the anxious members. Remember that it is more to your credit to have a 48-hour labor with a live baby and a mother in good condition than a 16-hour labor with interference, a dead baby and a mother badly lacerated or infected.

How are we to handle these home occipitoposterior cases? First, we are to avoid infection by making rectal examinations. It is necessary to make a vaginal examination when we are not sure of our rectal findings and when the cervix is completely effaced and thin, we have the touch of complete dilation on vaginal examination or we find a dilation of only four or five cm. If it is necessary to make a vaginal examination, use 3½% iodine to the vulva and perineum and as a lubricant for the sterile glove. "Johnson & Johnson," or as it is better known by its trade name, "Synol Soap," is used. This acts in two ways: first, by its antiseptic action; second, by its lubrication. It gives the most excellent results and is one of the necessities of the obstetrical bag.

We must not forget the importance of watchful waiting at this time. This is harder in the home than in the hospital, as the family will interfere there more. They want you to terminate the suffering even to operative procedure, and that is one reason the mortality is lower in the well-regulated hospitals than in the homes.

While waiting for dilation with these suspected occipitoposterior cases, we must save the patient's strength. She should not bear down with her pains until there is a complete dilation, as it will not only exhaust her but will bring about a relaxation and elongation of the uterine ligaments, causing a prolapse in later life.

Morphine and scopolamine are used at this time to prevent exhaustion of mother and child. I have been using pavon with scopolamine and like it much better than the morphine and scopolamine, as I have been able to use it over a longer period of time in resting my patients. It has had no bad effect to mother nor child. By its sedative, analgesic and antispasmodic action, we overcome the danger of a contracted ring in these long, tedious cases, and as yet I have never had a blue baby

from its use, as with morphine and scopolamine. This is due to the fact that pavon in therapeutic doses scarcely affects the respiratory and circulatory centers.

There is no cause for alarm after our patient has been in labor eighteen or twenty hours without much or any progress if we have been saving her strength and taking foetal heart tones. Bear in mind that 90% will rotate anteriorly if they are given time and that three out of every four of the remaining 10% will be born spontaneously with the face toward the symphysis and this leaves a small per cent for operative interference. If we do not have complete dilation by the time of the average duration of labor, the use of a bag is advised. If we have to send out for a bag we can, while waiting ,pack the lower segment of the uterus and cervix with gauze. This can be done with little discomfort to the patient and is very helpful toward end results so much so that it is sometimes found unnecessary to use the bag. After we have complete dilation and expulsion of the bag, we are justified in waiting four hours before interference, or of making a positive diagnosis by getting the position of the ear. Up until this time our diagnosis is probable and not positive.

We now place the patient on a kitchen table in a good light and use 3½% iodine on the abdomen from the umbilicus down over the vulva and on the inner side of the thigh from the knees down. Our patient is then anesthetized. As a rule, in the home, city or country, we do not have a sterile gown. We scrub up and if we have no long sleeve glove we paint the forearm that is to be used with 3½% iodine from the elblow down to the wrist, put on sterile gloves and place a rubber band around the wrist. The glove is then lubricated with Synol Liquid Soap and we are now ready for the invasion of the parturient canal.

The treatment will depend upon the station of the head, the constitutional symptoms of the mother or distress signs of the child. When the ear is located and the diagnosis is made of a persistant occipitoposterior and the head is found on the pelvic floor, the forceps are applied. Traction is made in a horizontal plane until the forehead comes behind the pubis. The handles are now raised toward the pubis and the occiput is delivered over the perineum and then the brow and face come from under the pubis. It is necessary, even in the home, to do an episiotomy, especially if the patient is a primeparae. By so doing, we can save an extensive laceration of the pelvic floor and sphincter.

If the head is above the brim or in the midplain, the operation of choice in the home is one of version. There it would be very hard to rotate with the hand, apply forceps and try to engage the head, then to remove them and allow the patient to come from under the anesthetic and start in labor again for a couple of hours, and again to apply the forceps, making the delivery. The main objections to this for these difficult home deliveries are too many invasions of the parturient canal, which increase the danger of infection.

In doing podalic version our greatest mistakes are too much haste and not enough deliberation, and not figuring out the various steps in the operation before invading the uterus. If you lose your head you will make the operation harder than it really is. It would be well to Potterize and bring down both feet at one time and be sure to do the version slowly. In doing it rapidly we swing the arms up to the sides of the head and as it is very difficult to bring them down and deliver the after-coming head, we shall probably end with a dead baby. No doubt Potter's success in version is due to his coolness and deliberation.

In conclusion, I wish to report three cases of occipitoposterior position that singularly occurred while this paper was being prepared. One rotated anteriorly with time and the other two were unrecognized until the head came from under the pubis.

CASE 1: Mrs. H. G. S., age 25. Para 1. Went into labor April 1, 1922 at 11 P. M. Had weak, irregular pains which continued until April 3rd at 8 P. M. At this time I made an internal examination and found the cervix effaced and very thin, dilation 4 cm., and the head high and pressed against the pubis, leaving a space between it and the sacrum. With the external findings I made a probable diagnosis of right occipitoposterior position, inserted a large bag at 8:30 P. M., which was expelled with slight traction on the morning of April 4th at 2 A. M. I made a rectal and found the head still high and in the same position and felt sure that this would be an operative case but decided to wait until daylight. At 4 A. M. was called and found bulging; at 4:30 A. M. she delivered normally and spontaneously, a 9½ pound baby girl. This patient was in labor from April 1, 11 P. M., until April 4th, at 4:30 A. M. During this time she was given four ampules of pavon with scopolamine and

two independent doses of scopolamine gr. 1/200 each. During this long and tedious labor only two internal examinations were made, the patient showed no signs of exhaustion and made an uneventful recovery.

CASE 2: Mrs. H., age 20. Para 2. Past history: First delivery in 1920. Was in labor about seven hours when forceps were applied, resulting in a deep laceration and the baby dying with convulsions on the second day. Indications for forceps, unable to obtain.

Present delivery: Patient went in labor April 10th, at 9 P. M. Was called at 11 P. M. and found the patient having hard pains. A cystole and rectocele became so prominent I thought there was a bulging. On making a rectal the head was found in midplain and there was nearly a complete dilation. I made my set-up, gave five min. of pituitrin and in a few minutes the head was on the perineum. The first suspicion of an occipitoposterior position was when I saw the head trying to rotate. The baby was delivered with the face toward the pubis. This O. P., no doubt, was due to the laceration of the vaginal tract and pelvic floor from the first delivery.

CASE 3: Mrs. O., age 24. Para 2. Past history: First delivery in 1920, normal labor of average duration and spontaneous delivery.

Present delivery: Went into labor April 20th at 10 P. M. On April 21st, at 7 A. M., she had severe pains with flattening of perineum, which suggested rapid progress. On making rectal examination, found cervix effaced with a touch of complete dilation and the head in midplain. Took patient to birth room; no progress was made and on internal examination found cervix very thin and a dilation of only four cm. Inserted a large bag and took the patient to her room. Was called at 1 P M, found bag being expelled and the head followed immediately with the face toward the pubis. The baby was in good condition and the puerperium satisfactory.

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*Discussion:* H. M. WILLIAMS, M. D., Oklahoma City, Okla.

In presenting the subject of occipitoposterior, the management and care of in the home is one that interests most every physician engaged in the practice of medicine, as there are few doctors who do not at some time during his practice meet with this abnormal position. Only about 2% occur in this position, but at some time we are sure to meet our percent of these cases.

I am glad to note that in his paper the doctor has made special emphasis upon two of the most important phases of this subject. That is, first, diagnosis. Second, watchful waiting.

The first, however, is not at all times an easy matter to do, as the text-books and authorities would lead us to believe. It is, though, very important because after the physician has once made his diagnosis he will be able to manage the case accordingly.

We find that in our experience to make a diagnosis before dilation has taken place and the head is well down is a difficult thing to do.

After our diagnosis is completed and we find that our position is an occipitoposterior we proceed to follow the plan of watchful waiting which the doctor his so well emphasized. Not infrequently in this type of case the patient suffers permanent injury, the child has been sacrificed because this plan was not followed.

The free use of opiates should be resorted to and if possible the physician should absent himself by getting busy on some other case, as the anxious friends, unless he be a man of firm will, may endeavor to have him bring about labor by mechanical means before the time indicated.

If, after watchful waiting, in due time no progress is made and the head is not engaged in the superior straight, I endeavor under anesthesia to rotate by the use of the hand. After the head is engaged or low down we endeavor to apply forceps and to rotate if possible by this means. If unable to rotate to an occipitoposterior, than by means of forceps to bring the head well down upon the pelvic floor and after complete flexion remove the forceps. Follow again the watchful waiting which in most cases will result in expulsion of the child, which will cause less tramatic injury to the mother and the child if the forceps were not removed at this junction.

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*Discussion:* W. A. FOWLER, M. D., Oklahoma City, Okla.

I have such a high regard for Dr. Rice's ability as an obstetrician that I regret to take a position in opposition to him in any important respect. However, when he recommends the delivery of posterior cases as such without rotation, I shall have to absolutely and unqualifiedly disagree with him on this point. With the whole hand in the vagina in cases after engagement, the head can easily be rotated to anterior, and

one blade of the forceps introduced before removing the hand in order to maintain rotation. About one-half inch in diameter is saved by delivering in this position, thus lessening the danger of injury to the baby's head or the soft parts of the mother.

As Dr. Rice stated, however, the percentage of cases in which he recommended this treatment is very small. The paper in every other respect is excellent. He rightly lays great emphasis upon the importance of conserving the patient's strength by rest, nourishment, the relief of pain and the avoidance of bearing-down efforts in the first stage. Light nourishment should be given every four hours in the first stage.

Vaginal examinations are usually unnecessary and should be avoided as far as possible. aMnual dilation of the cervix and manual rotation of the head in the first stage are usuallyy unnecessary and pernicious procedures.

### CLOSING.

This paper was written with the thought of helping those doing home obstetrics and rural practice and I am sure that if Dr. Fowler has done country obstetrics here, he will not advise the untrained man with no assistance but that of neighbors, to place his whole hand in the vagina and rotate the head. It would be the proper thing to do in proper surroundings with the right help, but I feel that in the rural home in this particular country it would be very dangerous, and I speak from practical experience in rural work. There is no question but that it takes more courage for watchful waiting than interference, but I am sure that the end results to mother and child will be much better. By well watching the patient's strength and giving her rest periods, the head will most probably rotate. If it does not, in the majority of cases, the head will be born spontaneously in the O. P. with no harm to mother nor child. Then you will say that courage to wait has won out.

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## THE USE OF HYPERTONIC SALT SOLUTION IN TREATING ENCEPHALITIS LETHARGICA.

W. W. RUCKS, M. D.

This patient, a married man, 33 years old, was admitted to the hospital on May 29, 1922, with a history of having become ill a few days prior to his admission with a feeling of malaise, headache, and fever. The fever gradually came on, reaching a slightly higher period each day. Typhoid fever was suspected. Two days prior to his admission he was very nervous and restless, complaining of intense headache and double vision. Suddenly he was seized with a general convulsion. Following this, he was delirious, maniacally inclined, so much so that he could not be kept at home. On the day of his admission to the hospital, he had two convulsions, and was so maniacal that it required two nurses to hold him in bed. His temperature at that time was 103. Blood count done on the day of admission showed 10,000 white cells with 86 percent polly. Widal was negative, also negative blood Wasserman. A spinal puncture done at that time resulted in obtaining a clear fluid under great pressure, with a cell count of 232. Negative globulin and Wasserman. This blood and spinal fluid finding, with the picture of an acute general infection involving the central nervous system, which was evidenced by diplopia, great restlessness, convulsions, and maniacal frenzy, enabled me to make a diagnosis of Encephalitis Lethargica, and to predict the lethergy which soon followed.

Knowing that the pathology consisted largely in an edema of the brain stem, and having recently familiarized myself with Harvey Cushing's use of hypertonic salt solution in syphilis of the nervous system, and his claim that edema of the brain is lessened and its actual size reduced by the injection of 100 cc. of a fifteen percent salt solution into the vein, I began its use. An injection of 100 cc. of a fifteen percent solution was given May 20th. He continued restless but had no further convulsions. On the 21st, it was repeated, following which he rested much more quietly. The next day he was drowsy and was soon in the typical somnolent stage. The hypertonic solution was continued for two more injections. Spinal puncture during this period showed a fluid under less pressure with the cell count decreasing. The somnolent stage in this case lasted a surprisingly short time but the ultimate recovery of the patient has not been satisfactory in that he was left mentally clouded, which condition has not yet cleared up.

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### CHATTANOOGA MEETING OF THE SOUTHERN MEDICAL ASSOCIATION.

The Southern Medical Association will hold its sixteenth annual meeting in its birth city—Chattanooga, Tennessee, "The Dynamo of Dixie," Monday, Tuesday, Wednesday and Thursday, November 13-16, 1922. Dr. Searle Harris, Birmingham, Alabama, President.

## PROCEEDINGS OF THE OKLAHOMA CITY CLINIC "ROUND TABLE," WESLEY HOSPITAL.

### TWO CASES OF PYELITIS IN CHILDREN, RESISTANT TO MEDICINAL TREATMENT.

By JOHN Z. MRAZ, M. D.

No. 1. Serial No. 8390—Girl 5½ years. At age of 4, had measles, and a few months later pertussis. A few weeks after recovery from pertussis, she developed a colitis, associated with the passage of large amounts of mucus and blood.

#### PRESENT TROUBLE.

Since the measles she has had a great deal of urinary frequency and vulvar irritation. Nocturia varies from once to four or five times per night. Two months ago, had an attack of irregular fever with chills. Has had much and varied medicinal and dietetic treatment with only very tempory improvement. Tonsils and adenoids removed 8 months ago. Bowels constipated.

#### PHYSICAL EXAMINATION.

Negative except as follows: Child pale and undernourished. Stubs of both tonsils present. Catheterized specimen of urine shows large amount of albumen and a gross number of pus cells. Culture shows colon bacilli.

#### TREATMENT.

2-11-22, Right ureter catheterized and 3 c. c. of ½% silver nitrate left in kidney pelvis.

2-28-22, Above treatment administered to both kidney pelves.

3-30-22, 3 c. c. of ½% silver nitrate instilled into right kidney pelvis.

This treatment was repeated on 4-21-22, and 5-11-22. Remnants of tonsils removed by Dr. Pollock of Ardmore.

#### RESULTS.

After the first lavage of right kidney pelvis, clinical improvement began and after second treatment no pus was found in right kidney urine. The left kidney urine was clear, therefore, treatment was confined to right kidney. The bladder urine began to clear up coincidently with the disappearance of pus from the right kidney urine At end of treatment, the segregated and mixed urines were negative to urinalysis and culture.

No. 2. Serial No. 8411—Girl age 6 years.

#### PERSONAL HISTORY.

Negative except for several slight attacks of tonsillitis and an attack of "Flu" in fall of 1918 which confined patient to bed for 9 days.

#### PRESENT TROUBLE.

Soon after recovering from the "Flu," she began having attacks of pain in right lumbar region associated with fever, chills, vomiting, and occasionally, burning urination. At first attacks recurred every 2 or 3 months, but they have been growing more frequent and of late not more than a week or two elapse between attacks.

#### PHYSICAL EXAMINATION.

Anemic looking child, but fairly well nourished. Tonsils are reddened and show infection. Otherwise negative.

Urinalysis (catheterized specimen) shows large amount of albumen and many pus cells. Culture showed colon bacilli.

#### TREATMENT.

7-16-22, Right ureter catheterized, 3 c. c. of 1% mercurochrome solution instilled into right renal pelvis. Urine from right kidney at this time showed many pus cells. Culture showed colon bacilli. Left kidney urine negative.

7-25-22, Right renal lavage with 3 c. c. mercurochrome 1% solution.

7-31-22, Treatment repeated as above. Tonsillectomy by Dr. J. C. Macdonald.

#### RESULTS.

After first treatment, the pus disappeared from right kidney urine and symptomatic improvement began immediately. The bladder urine cleared up more slowly but has remained clear since last treatment.

#### REMARKS.

The results in these two cases, confirm the observations of many other urologists that pyelitis in children even though very resistant to medicinal and dietetic treatment often clears up with remarkable promptness under lavage of the kidney pelvis.

In both the above cases, the pus in the kidney urine cleared up so promptly that I would have suspected a mistake in the urinalysis had not the clinical symptoms begun to improve just as promptly.

I do not mean to condemn medicinal and dietetic treatment. On the contrary, I believe that the conservative treatment

should always be given a trial first. But after a reasonable length of time, if there has not been complete disappearance of pus from the urine, then these children should be given the advantage of pelvic lavage just as we do in adults. Pelvic lavage is made possible in children, because of the delicate cystoscopes that are now made for that purpose.

It is my belief that by clearing up these kidney infections in childhood, we prevent many serious kidney infections later in life, for it is well known that pyelitis may begin in childhood, and after a period of latency extending over many years, light up anew often with destructive results. Pyelitis in childhood is often more difficult to diagnose than in adults. It is a good rule to suspect it in any recurring fever of obscure origin. The value of routine urinalysis is here well demonstrated.

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## CASE OF INFECTED GALL BLADDER WITH INFLAMMATORY THICKENING OF THE COMMON DUCT AND HEAD OF THE PANCREAS — CHOLECYSTECTOMY WITH DRAINAGE OF THE CYSTIC DUCT.

By MARVIN E. STOUT, M. D.

Mrs. H., Case No. 8479. Age 52. Had usual exanthematas, no other diseases, injuries or operations, except an incision of the left breast for puerperal infection, many years ago, recovery good. Otherwise puerperal and menstrual life normal. Passed menapause three years ago. No flow since. Aside from the present trouble patient has enjoyed good health.

Present trouble began twenty years ago with an acute attack of pain in the upper right quadrant, with fever, nausea and vomiting. Duration was of three or four days. Dr. Harry Peel, of Louisville, Ky., made a diagnosis of gall stones. Surgery was advised, but operation was refused. Patient continued to have similar attacks at intervals of from two to four months from this time up to about six months ago when the attacks became more frequent and much more severe, and with the last few attacks she has been slightly jaundiced. She has also had a marked digestive disturbance for the past few months which has consisted of gaseous erructations, sour stomach and a feeling of distress and fullness.

The present attack began forty-eight hours ago with severe pain in the region of the gall bladder, nausea and vomiting, and her physical examination revealed a well-nourished portly woman, scleras slightly tinged with bile. Temperature 102, pulse 120. Marked tenderness and rigidity over the gall bladder region. Otherwise negative. White blood count 18,200. Polies 82, coagulation time, three minutes. Urine normal.

Operation June 14, 1922. Gall bladder enormous size very much distended with sero-perulent material, and filled with stones. The walls were thickened and presented a number of necrotic areas. The common duct was thickened but contained no stones and the head of the pancreas was very large and indurated. The gall bladder was removed, a purse string was placed around the stump of the cystic duct and a catheter was inserted into it for drainage of the pancreas and bile ducts. Another tube was placed beneath to drain the abdominal cavity. The wound was closed in the usual manner.

On the following morning her tempera ture had subsided to 100 and her general appearance was considerably improved. There was free bile drainage through the catheter for ten days, when it was removed, and the drainage subsided some ten days later. She reports complete relief up to date.

### REMARKS.

I believe that in these advance cases of gall bladder infection where the bile ducts and pancreas are also involved, that we will secure better and more lasting results by removing the gall bladder and establishing drainage through the cystic duct in this way than by simple drainage, or by cholecystectomy without drainage of the ducts. It gives us all of the advantages of both cholecystectomy and of drainage, and should make for a more speedy and permanent cure.

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## THE USE OF HYPERTONIC SALT SOLUTION IN TREATING ENCEPHALITIS LETHARGICA.

By W. W. RUCKS, M. D.

This patient, a married man, 33 years old, was admitted to the hospital on May 29, 1922, with a history of having been ill a few days prior to his admission with a feeling of malaise, headache, and fever. The fever gradually came on, reaching a slightly higher period each day. Typhoid was suspected. Two days prior to his admission he was very nervous and restless, complaining of intense headache and double vision. Suddenly he was seized with a general convulsion. Following this,

he was delirious, maniacally inclined, so much so that he could not be kept at home. On the day of his admission to the hospital, he had two convulsions, and was so maniacal that it required two nurses to hold him in bed. His temperature at that time was 103. Blood count done on the day of admission was 10,000 white cells with 86 percent polly. Widal was negative, also negative blood Wassermann. A spinal puncture done at that time resulted in obtaining a clear fluid under great pressure, with a cell count of 232. Negative globulin and Wassermann. This blood and spinal fluid finding, with the picture of an acute general infection involving the central nervous system, which was evidenced by the diplopia, great restlessness, convulsions, and maniacal frenzy, enabled me to make a diagnosis of Encephalitis Lethargica, and to predict the lethergy which soon followed.

Knowing that the pathology consisted largely in an edema of the brain stem, and having recently familiarized myself with Harvey Cushing's use of hypertonic salt solution in syphilis of the nervous system, and his claim that edema of the brain is lessened and its actual size reduced by the injection of 100 c. c. of a fifteen percent salt solution into the vein, I began its use. An injection of 100 c. c of a fifteen percent solution was given May 20th. He continued restless but had no further convulsions. On the 21st, it was repeated following which he rested much more quietly. The next day he was drowsy and was soon in the typical somnolent stage. The hypertonic salt solution was continued for two more injections. Spinal puncture during this period showed a fluid under less pressure with the cell count decreasing. The somnolent stage in this case lasted a surprisingly short time but the ultimate recovery of the patient has not been satisfactory in that he was left mentally clouded, which condition has not yet cleared up.

## NEW BOOKS.

Diseases of the Skin. Second edition, by Henry H. Hazen, A. B., M. D., Professor of Dermatology in the medical department of Georgetown University; Professor of Dermatology in the medical department of Howard University. Cloth. Price $7.50, 596 pp. with 241 illustrations. St. Louis The C. V. Mosby Co. 1922.

This book in the first ninety pages clearly and concisely deals with anatomy and physiology of the skin, general etiology, symptomatology, pathology, diagnosis, treatment and hygiene. In the remaining 27 chapters diseases are taken up according to their suspected etiology. Especial emphasis has been placed upon the x-ray and radium treatment of various diseases, also phototherapy. Numerous illustrations are given of the more common diseases. Histopathology is well dealt with under each described disease. This book will serve as an excellent guide both to the general practitioner and the dermatologist.

Principles and Practice of X-Ray Technique for Diagnosis, by John A. Metzger, M. D., Roentgenologist to the School for Graduates of Medicine, Medical Department, University of California. Cloth. Price $2.75. Pages 137, with 61 illustrations. St. Louis. The C. V. Mosby Co.

This is an excellent book on technic and well written. It does not deal with diagnosis, nor go into detail with fundamental electricity for Roentgenology. On dark room technic, positions and exposure, it deals in minute detail. There are other chapters on dental and oral radiography, stereoscopy and localzation that deserve mention for their clearness and brevity.

## COUNTY SOCIETIES.

**Marshall County** Medical Society met August 10th with Dr. O. E. Welborn, Kingston, with the following medicos in attendance: Drs. Holland, Blalock, Gaston, Robinson, Ballard and Hart of Madill, and Drs. Lewis, Welborn and Haynie of Kingston. Maralia was the subject under discussion.

**McIntosh County** Medical Society met at Eufaula, Tuesday, September 19th, 1922. Subject: Typhoid fever. General discussion opened by Dr. J. C. Watkins.

**Kiowa County** Medical Society met at Mountain Glen, on August 15th, accompanied by their families; swimming was followed by a picnic supper, after which the society held its scientific program.

**Tulsa County** Medical Society held their first meeting after the summer vacation, Monday, September 11, 1922, at 8 P. M., at the Municipal Auditorium, Tulsa. Program: "Removal of Infected Tonsils Early in Life"—Dr. T. W. Stallings. "Presentation of Clinical Cases"—Dr. J. W. Childs.

**Carter County** Medical Society met Thursday, September 14, at the home of its president, Dr. G. W. Ammerson.

## PRESYSTOLIC MURMURS IN RAPID HEART SIMULATING MURMUR OF MITRAL STENOSIS.

Ernest E. Irons, Chicago, and Alpheus F. Jennings, Detroit (Journal A. M. A., April 1, 1922), record observations on three patients in whom there were heard murmurs similar to those of mitral stenosis and in whose hearts at necropsy no harrowing of the mitral valve was found. The report of a fourth case in which the presystolic murmur was noted in a large heart without mitral narrowing is added. The authors emphasize the fact that the recognition of such cases is important in the proper interpretation of physical signs and in the diagnosis of disturbances of the heart, and also is of theoretical interest in the determination of the actual time incidence and mechanism of production of the crescendo or rumbling murmur and thrill of mitral stenosis which terminate in a sharp or snappy first sound and have been commonly called presystolic in time, but which is really early systolic in time.

# THE JOURNAL

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Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

Failure to receive the Journal should call for immediate notification of the editor, 508 Barnes Building, Muskogee, Okla.

Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application. It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.


## *EDITORIAL*

### DR. BENJAMIN HENTON BROWN

NOVEMBER 22, 1870—SEPTEMBER 9, 1922.

No death in the Oklahoma medical profession has produced as sincere feeling of irreplacable loss and regret as that of Dr. Benjamin H. Brown, Muskogee, which came after a short, severe illness due to streptococcic infection, terminating in septic pneumonia.

Born at Waverly, Mo., when the Civil War had unsettled all things, the difficulties incident to acquiring an education of the finished character he achieved, is of itself indicative of the high courage inherent in the man. Son of a surgeon of the Confederate Army, he sprang from a long line of distinguished forbears, both on his paternal and maternal side, his mother closely related to ex-Governor Walker of Virginia, and ex-Senator Hopkins of Illinois, while his father was a relative of John C. Calhoun. It is characteristic of the innate modesty of the man that these illustrious connections were never advanced by Dr. Brown, not even to his intimates, and the knowledge is only at hand by reason of his methodical habits which led him to write a biography of his life up to the time he married in 1911. This work is so well written, contains so much of value and worth that it will be given partial reproduction in this JOURNAL. After attending the common schools of his neighborhood he entered Wentworth Military Academy, Lexington, spending several years, during which time he "got into rather more than my share of mischief." Graduating from Wentworth in June, 1890, he received the Washington and Lee scholarship for having the highest standing in a class of twelve. One of six to enter the competitive drill, he states he was too "nervous," but despite that attained second place, later attending the Interstate Military Drill at Kansas City, where his liveliest memory was that the dinner at the Coates House "cost a dollar a head," a fact upon which "we immediately decided that the fare was too rich for young men of our limited means." On returning to his home he writes: "I stopped off at Lexington . . . to return to the matron . . . the key to the kitchen door, of which I had secretly possessed myself some months before, and which had, on several occasions proven a friend in the time of famine, to which a growing boy is so prone."

Recalling his feeling of awe on first stepping on the campus at Washington and Lee and viewing the "old buildings so rich with memories of great men and the Old South . . . Certainly that school embodies in its traditions and teachings all that is

best of a noble race of people;" he briefly chronicles the events so dear to memory, among which was a trip of six days to Washington, where he saw "all the sights," incidentally shaking hands with President Harrison. He was able to win each year a scholarship, thus having no tuition to pay, quite a saving in his circumstances. He had a scholarship to spare when he left the college. Almost losing opportunity to enter his last year, that difficulty was finally obviated by his plunging into debt to a high degree, comparatively. Receiving his degree June, 1893, that year of all years in our history when all things were at the lowest ebb, employment of any sort was simply unobtainable, so he turned to the farm where, as he states it, "my folks were land poor"—fifty acres I sowed in clover was an absolute failure . . . wheat I made I was compelled to let go at 19 cents a bushel." From this labor he undertook, successfully, a high school principalship and for several years teaching was his vocation. During this work he was enabled to pay off his indebtedness, as well as save some money. His principal diversion in these, his Texas locations, was bird shooting, where he became a "fair shot." His description of the Galveston storm is vivid; though he was a hundred miles away, the shock of the two or more days of continued wind was a matter of great concern County seat wars, gambling, saloons, outlawry generally, affected and influenced the country generally at that time, and Dr. Brown's narrative of his observations and experiences are intensely interesting. His decision to teach no longer ended with his entrance into the study of medicine at Rush Medical College in January, 1904, where he completed his work in 36 months of study. He served in every available hospital position open to him between terms, his first being at the Lying-in-Dispensary where "I had 10 cases in 17 days." He was elected to the Alpha Omega Alpha, an honorary medical society, whose membership was based on scholarship. It is not surprising to those who knew the man to learn that when the time came for election he was elected president of his class. His time in the last year at Rush, aside from his regular duties, was special work under Robert LeCount on "Primary Carcinoma of the Bladder." "The results . . . were published under my name in the American Journal of Medical Sciences, November or December, 1907." "LeCount gave me a letter to Dr. Nicholas Senn, who gave me the appointment as interne on his service at the Presbyterian Hospital." He graduated from Rush March 21, 1907, receiving his diploma in the upper ampitheatre, "notwithstanding I was suffering from influenza, and had a temperature of 102 at the time." His interneship began with the administration of anesthetics. The latter part of June Dr. Senn left for his South American trip, Dr. Brown giving the last anesthetic ever to aid that brilliant surgeon, who, shortly after his return a desperately sick man, died about the end of the year. Later assisting E. J. Senn, and doing service in the pediatric section as well. It was in this service, under Churchill and Dodson, that Dr. Brown administered the first intra-spinal injection of Flexner's antimeningitic serum ever given in Chicago. His work, now more than ample, called him successively to the clinics of Hyde, the eye and ear and cleft palate cases, the latter work bringing him in contact with Shambaugh, Brophy, Brower and Herrick. He also, through the friendship and interest of Metcalf, was made an assistant to Webster, while Ewing contacted him with Bevan and Lewis and Wilson and Murphy; through Rosenberger, he also assisted Graham . . . "Taken all in all I do not think any interne at the Presbyterian, during my day or before, had a more valuable or rounded service." After termination of his work at the Presbyterian he served as examiner for the Burlington, with headquarters at Alliance, Nebraska, for a time, his district covering some 1200 miles of the system, then was transferred to various locations. From that work he moved to Iron River, Michigan, for 18 months, intending, after his term of service

there to locate in the southwest, but, upon the persuasion of his employer, plus increased financial inducements, remained for a time longer. This was fortunate for him, for, as he says, he became engaged to "the sweetest and best girl in the world," so July 1, 1911, he was married to Miss Margaret Heppen, after which they removed to Muskogee, where he soon evidenced his remarkable ability and worth to a large clientele. Upon our entrance into the World War, Dr. Brown's principles and ideals of duty permitted him no conclusion except to enter the service as an army surgeon, where he served at Forts Sill, Leavenworth and Camp Knox successfully, being rapidly promoted frm his lieutenancy to a majority. It was during this time that he suffered severely from influenza and there is hardly a doubt that the residue from that infection was the indirect cause of his death at a time when life promised most and only success was crowning his pre-eminent career, after years of intelligent application. His mother, wife and four children survive him. His remains were interred by the side of his father in the Waverly (Mo.) cemetery, burial being under Masonic auspices at Waverly.

The writer, recalling one of his truest friends and sage advisors in all things, feels his utter inability to approximate the virtues of his departed friend. A few months prior to his demise he kindly consented to aid in the JOURNAL'S work, and it is a matter of sincere regret that our membership could not have the results of his finely equipped mentality and premier worth. Without question his loss to the Oklahoma profession is irreparable. THOMPSON.

## OUR MEDICAL SCHOOLS.

Since the American Medical Association inaugurated the campaign more than twenty years ago for raising the standard of medical education in the United States there has been a revolutionary change in the equipment and methods of teaching in our medical colleges. The increased requirements of most of our State Boards of Medical Examiners has forced many of the smaller medical schools that were unable to meet these requirements to quit and others to merge into larger endowed institutions. The number of students has been lessened greatly and the average quality of the student body is considerably higher. The educational attainments and scientific training of our graduates average much higher than were those of the graduates of two decades ago.

All of these are changes for the better and no one would want to see a return of the old-time medical school that was operated in the financial interests of the members of its faculty, nor would we want to see the educational requirements for students lowered.

However, there are grave doubts as to whether our better medical schools as now conducted are meeting all the needs of the country. The present requirements of our Class A schools are, two year's college work, four years in medical school, internship in an approved hospital. This means seven years after graduating from high school before the student can take an examination to become a licensed physician. The charge is made that in most of our medical schools too much attention is being given to the scientific side of medicine. As the practice of medicine is not an exact science but has always been regarded as an art, the graduates of these institutions are really not prepared to practice medicine after seven years of costly preparation.

Instruction is given in the laboratories, class rooms, free dispensaries, clinics and the hospitals. All of these are excellent methods but when do our students receive the training that is to prepare them to become what has always been the backbone of the medical profession, the family physician? How many recent graduates of Class A Schools do you know who have located in communities where there are no hospitals? Their training has been such that access to a hospital seems a necessity. Owing to the "over production" of medical graduates in years gone by, most of our rural districts and small towns are still amply provided with physicians, but who is to take their places when these men drop out? Even now the need is being felt in some parts of the country. Two courses are open to overcome this tendency. Either our medical schools must prepare men who will be willing to do the work in these communities as they are, or changes in the communities themselves must be made so as to make them attractive to our present-day and future graduates.

Some of our schools have recognized the lack of the personal touch in their educational scheme and are endeavoring to return to a modified form of the old preceptor plan. This will unquestionably be an advance over the present system, and should work to the advantage of the schools, like our own State Medical School, that has, comparatively speaking, a small number of students.

While this will remedy a part of the defects in our present system it is doubtful if it will supply physicians for communities without hospital facilities, as it is certain that most of the students would have as their preceptors physicians near the school or in the larger cities.

When the pressure from this need becomes great enough it will be met, but in what way has not yet been determined.

NESBIT.

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## *Editorial Notes—Personal and General*

**Dr. J. O. Irwin**, Ashland, has been very sick with influenza.

**Dr. John Dorough**, Maysville, has located in Perry, Oklahoma.

**Dr. G. A. Kilpatrick**, Wilburton, has removed to Henryetta, Oklahoma.

**Drs. C. B. and Pauline Barker**, Guthrie, spent July and August in the Eastern clinics.

**Dr. and Mrs. J. L. Houseworth**, of Guthrie, spent August in Los Angeles, California.

**Dr. D. P. Chambers**, Stilwell, has moved to Norman, where he will continue to practice.

**Dr. Waverly Hume**, Henryetta, has returned to Coalgate, where he will resume his practice.

**Dr. and Mrs. E. O. Barker**, Guthrie, spent the summer touring the Eastern states in their car.

**Dr. B. W. Ralston**, Lindsay, has removed to Okmulgee, where he will limit hi spractice to urology.

**Dr. G. E. Stanbro**, Pawhuska, is in Baltimore taking a post-graduate course in Johns Hopkins University.

**Dr. S. E. Mitchell**, formerly of Stigler, has moved his offices to rooms 811-12 Barnes Building, Muskogee.

**Dr. J. C. Mahr**, Oklahoma City, addressed the Kiwanis Club, Enid, Oklahoma, October 3, 1922 on the subject of "Community Help."

**Dr. Louis Bagby**, Vinita, has returned from St. Louis, where he has been taking a special course on diseases of the chest and stomach.

**Dr. L. E. Emanuel**, Chickasha, made a trip to Galveston to attend the District Conventnon of the Kiwanis Clubs held there this month.

**Dr. and Mrs. L. A. Hahn**, Guthrie, spent July and August visiting the Clinics of Europe and attending the Passion Play at Oberammergau.

**Dr. W. E. Dicken**, Oklahoma City, is reported seriously ill in a hospital in Pasadena, California, where he has been spending some time this summer.

**Dr. E. M. Miller**, Buffalo, has returned to his home after a three months stay in the hospital at Wichita, Kansas, where he underwent an operation on his knee.

**Dr. J. M. Pemberton**, Okemah, has returned from Chicago, where he has been taking a post-graduate course in medicine. He will resume his practice at Okemah.

**Dr. H. A. Dever**, El Reno, has returned from a lengthy auto trip, having covered over seven thousand miles in his journey through California and British Columbia.

**Drs. Wm. H. Bailey, T. C. Terrell and W. F. Keller** announce the opening of the Bailey-Terrell Laboratories at 345-6 American National Bank Building, Oklahoma City, Oklahoma, October 1, 1922.

**Dr. A. S. Graydon**, Idabel, while enroute to Sulphur, Oklahoma, October 7th, was stricken with paralysis, affecting his entire left side. Dr. Graydon was taken to Sulphur, where he has been resting well. He will be out in a short time.

**Dr. Frank H. McGregor**, Mangum, and 20 members of Paul Garrett Post, American Legion, motored to Bartlesville to attend the State encampment of the American Legion and to push the candidacy of Dr. McGregor for State Commander.

## DEATHS.

Alexander Righter Craig, Secretary of the American Medical Association since 1911, died of uremic poisoning while on his vacation at Port Deposit, Maryland, September 2, aged 54. Dr. Craig was born in Columbia, Pa., July 31, 1868, the son of Dr. Alexander Craig and Eleanor Margaretta Righter Craig. He received his A. B. degree from Franklin and Marshall College, Pennsylvania, in 1890, the A. M. degree in 1893 and the M. D. from the Medical Department of the University of Pennsylvania in 1893. In 1920 he was granted the honorary degree of Doctor of Science by Franklin and Marshall College, his alma mater. Following his graduation in medicine Dr. Craig served as resident physician at the Philadelphia Polyclinic Hospital, 1893 to 1894. He then practiced in Philadelphia until 1895 and in Columbia, Pa., from 1895 to 1906, when he removed to Philadelphia and continued practice until 1911. At the Los Angeles Session, in 1911, he was elected Secretary of the American Medical Association; this election was the culmination of many years of service to organized medicine.

On August 25 he left for his vacation at the family farm in Port Deposit. Tele-

grams announcing his death, September 2, were the first intimation had of his serious illness. The funeral was held at Port Deposit, Md., September 6. Dr. George E. de Schweinitz, President, represented the Association at the funeral. Dr. Craig was universally loved, a man with never a harsh word, calm, self-effacing, reticent, and withal a marvel of efficiency in his chosen work.

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Dr. T. S. Booth, of Ardmore, Oklahoma died September 23, 1922, of cerebral hemorrhage. Dr. Booth installed the first telephone in Ardmore, Oklahoma, and his practice was very extensive throughout five counties in that locality. He was a member of the Oklahoma State Medical Association, the Southern Medical Association, and the North Texas Medical Society. He was a member of the Woodmen and a 32d Degree Mason.

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Dr. F. L. Hughson, formerly of Vinita, Oklahoma, died in Breckenridge, Texas, September 14, 1922, from pneumonia.

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Dr. James McMillan, Goodwell, Oklahoma, was found dead in his building at Goodwell, September 14, 1922.

## OPENING OF SULPHUR SANITARIUM.

Legion men from all over Oklahoma, as well as prominent citizens not connected with the ex-service man's organization, were present at the ormal opening of the Sulphur Soldier Hospital on Saturday, August 26th.

The completion of the Soldiers' Sanitorium at Sulphur marks the first material step in the splendid hospitalization program which the State and the American Legion are putting through in Oklahoma. When the finishing touches are put on, particularly terraccing of the lawns about the buildings, the Hospital structures will represent one of the most imposing groups of its kind in this section ofthe country. The location is ideal, being on a high spot about three-fourths of a mile south of the city of Sulphur, overlooking Platte National Park. The Ardmore-Sulphur highway passes by the grounds.

In all there are seven buildings in the group, including the administration, dining room, personnel, cottages and ward, medical superintendent, nurses' home and power plant and laundry.

The administration building contains the genera loffices, office of the head nurse, medical superintendent, assistant to the medical superintendent, staff conference room, medical library, stores, nurses' conference room, dental room, dining room, storage room for medical records, eye, ear, nose and throat room, x-ray and dark room, x-ray storeroom, laboratory, preparation room, examination room, dressing room, and minor surgical room. Beneath this building there is a cellar which will be used as a general storeroom. The administration building is 143 feet long and 40 feet wide.

The kitchen and dining room building contains the main kitchen, storeroom, patients' diningroom, personnel diningroom, and staff diningroom.

The cottage and ward building contains twelve 2-patient cottages with sleeping porches, a living room 26x34 feet and sun parlors at each end of the cottages. There is also the wash room, lavatories, nurses' station, diet kitchen, dining room, utility room and linen closet, storage room, five single rooms, two 2-bed wards, two 3-bed wards, one 10-bed ward, and a solarium. The cottage building is 250 0feet long and 40 feet wide, and the ward building is 160 feet long and 30 feet wide.

### Has Nurses' Home.

The personnel building contains a living room, bedrooms, etc. The nurses' home has a living room, small kitchen and six bed rooms. The medocal officer's residence has a living room, a kitchen, two bed rooms and a bathroom.

The power plant and laundry, both of which are equipped with the most modern machinery, complete the group. The buildings are heated by steam, using coal as fuel. Water for drinking and other purposes is secured from the city of Sulphur.

The sanitarium is entirely under civilian supervision. It is operated by the State and the Veterans' Bureau. Patients are handled by contract between the State and the Bureau.

Administrative affairs of the Hospital are unde rthe supervision of the Soldiers' Relief Commission, which is composed of H. B. Fell of Ardmore, Chairman; S. G. Victor of Afton, and H. H. Magan of Tulsa, all of whom were appointed for a two-year term which expires on June 30, 1923.

### Room for Seventy-Five.

There is room for 75 of the disabled heroes at the Sulphur institution. A recent survey revealed that there are at the present time a total of 138 Oklahoma boys designated as tubercular patients, who are confined in medical institutions in the states of Texas, Arizona, New Mexico and Washington. Of this number 43 are at the United States Veterans' Hospital No. 25 at Houston. Climatic conditions at Houston are unsuitable for the treatment of tubercular patients, according to the Oklahoma officials, and it has been requiring considerable effort on the part of those in charge to persuade the Oklahoma ex-service men to remain there. Many of them have returned to Oklahoma and their pathetic pleas for accommodations here were so great that in justice to them means for such institutions as is now located at Sulphur had to be provided. An effort was made to secure a government hospital, but the only means feasible following negotiations with the federa lauthorities was a hospitai of state construction.

The cost of the Sulphur sanitarium was approximately $180,000, including buildings, fixtures, etc.

Dr. Barton H. Watkins is medical superintendent in charge of the institution. He came here from Gotebo, Oklahoma, and was formerly connected with the Unted States Public Health Service at sanitariums in Arizona and New Mexico.

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## RESOLUTIONS ON THE DEATH OF DR. BENJAMIN H. BROWN.

WHEREAS, The Muskogee County Medica' Society has, by the death of Dr. Benjamin H. Brown, lost a member who has been very active in the Society since he came to Oklahoma some eleven years ago;

BE IT RESOLVED, That this Society has lost one of its most valued members, one who was at all times willing to do his duty as a physician, a man, and a citizen;

That this Society wishes to express its appreciation of the work of Dr. Brown in the Society. His preparation of scientific papers and his discussions always represented careful study, concentration and good judgment. He served the Society for one year as President and two years as Secretary, being at all times faithful and cheerful in the discharge of his duties.

BE IT FURTHER RESOLVED, That a copy of these resolutions be sent to the family of Dr. Brown and that they become a part of the permanent records of this Society.

W. D. BERRY.
C. M. FULLENWIDER.
P. P. NESBITT.

Muskogee, Oklahoma,
October 2, 1922.

## HOSPITALS.

The State Board of Affairs has granted the University Hospital at Oklahoma City permission to dril la deep water well for the use of the Hospital. This will give the Hospital its own water system which in the past has been badly needed by that institution.

The report recently filed by Dr. G. A. Waters, warden of the State Reformatory at Granite, Oklahoma, shows that the average number of inmates has been 512 and that the daily average cost for each inmate has been $1.05. The farming account shows a profit of $22,860.06; the stone quarry a profit of $22,343.95; the shoe shop a profit of $1,074.16 and the tailor shop $1,-064.33.

Watonga has a new Hospital which has recently been opened. Dr. J. B. Leisure has the hospital nicely equipped, having recently returned from Oklahoma City, where he selected the furnishings.

## HOSPITALS FOR SOLDIERS.

The American Legion of Oklahoma and the Soldiers' Relief Commission, with the aid of the State, have provided three hospitals to accommodate ex-service men. One hundred beds are available at University Hospital at Oklahoma City, for Oklahoma men whose disabilities are not traceable to service, accepting general cases only.

The Soldiers' Tubercular Hospital at Sulphur will accommodate eighty tubercular patients. The Soldiers' Memorial Hospital at Muskogee, to be completed about December 15, 1922, will have 500 beds and will be leased by the Veterans' Bureau.

## OKLAHOMA DOES THINGS.

Oklahoma is doing more for the hospitalization of its world war soldiers than any other State in the Union, and almost as much as the Federal Government itself. The Government has had twenty million dollars at its disposal to build hospitals for soldiers and has done practically nothing with it. Oklahoma had one and a quarter million dollars and with that money will, before the close of the year, have completed hospitalzaton for as many soldiers as the Federal Government has. In Oklahoma we do things. In Washington they talk about doing them.

## MEDICAL SERVICE AT MODERATE COST.

"A modern clinic may serve the interests of both preventive and curative medicine. Persons may resort to it to make sure that they are well or to have their diseases recognized and treated. Diagnostic and treatment facilities are now available in cities and large towns for the rich and well-to-do and for the very poor, but self-respecting people of small means are too often at a loss for good medical aid. It is true that the leading consultants and specialists make concessions in individual cases but this generous attitude of the profession solves only a minute part of the problem. The tendency to establish medical group clinics makes it easier to provide modern facilities at lower cost, but at best the fees are considerable, and many people hesitate to ask for a concession in charges. Hence the demand for a pay clinic for persons with small incomes.

"An experiment in meeting this demand was begun by the Cornell University Medical School in New York City in November, 1921, with the cooperation of a special committee of the United Hospital Fund. The work of this committee, which is helping to improve standards of dispensary management and service, is supported by the Rockefeller Foundation. The initial deficit of the Cornell clinic demonstration, which is expected to become self-supporting, was underwritten by this committee.

"The essentials of the plan are: (1) medical, surgical, and specialist service by well-trained young doctors, who are paid for their work, (2) supervision by the college faculty, (3) instruction of medical students in the clinic, (4) appointments with patients made by telephone or post to avoid waste in waiting, (5) clinics, in addition to day sessions, open two evenings a week for the convenience of patients employed during the day, (6) a charge of $1.00 for each call, laboratory examinations and X-ray plates at cost, a complete diagnostic examination for an inclusive fee of $10 for patients referred by physicians. On the day the clinic opened 700 persons presented themselves. There has been a steadily growing patronage ever since. An increasing number of doctors have brought patients for diagnosis and consultation. It is too early to assert that clinics of this kind will satisfactorily solve the problem, but experience so far has been distinctly significant and encouraging."

## PRIMARY ACTINOMYCOSIS OF SKIN.

Surgical solution of chlorinated soda (Dakin's solution) gave prompt results in the case cited by M. J. Baskin, Alliance, Neb. (Journal A. M. A., May 6, 1922), after the administration of potassium iodid, internally, and boric acid, locally, had failed to give results. The lesion is covered with gauze which is kept constantly saturated with the solution. At intervals, moist heat is applied over the gauze. This results in the decomposition of the solution with the liberation of free chlorin, and to this Baskin attributes his results.

### STANDING COMMITTEES.*

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